WESTERN GAS

ecember
1926

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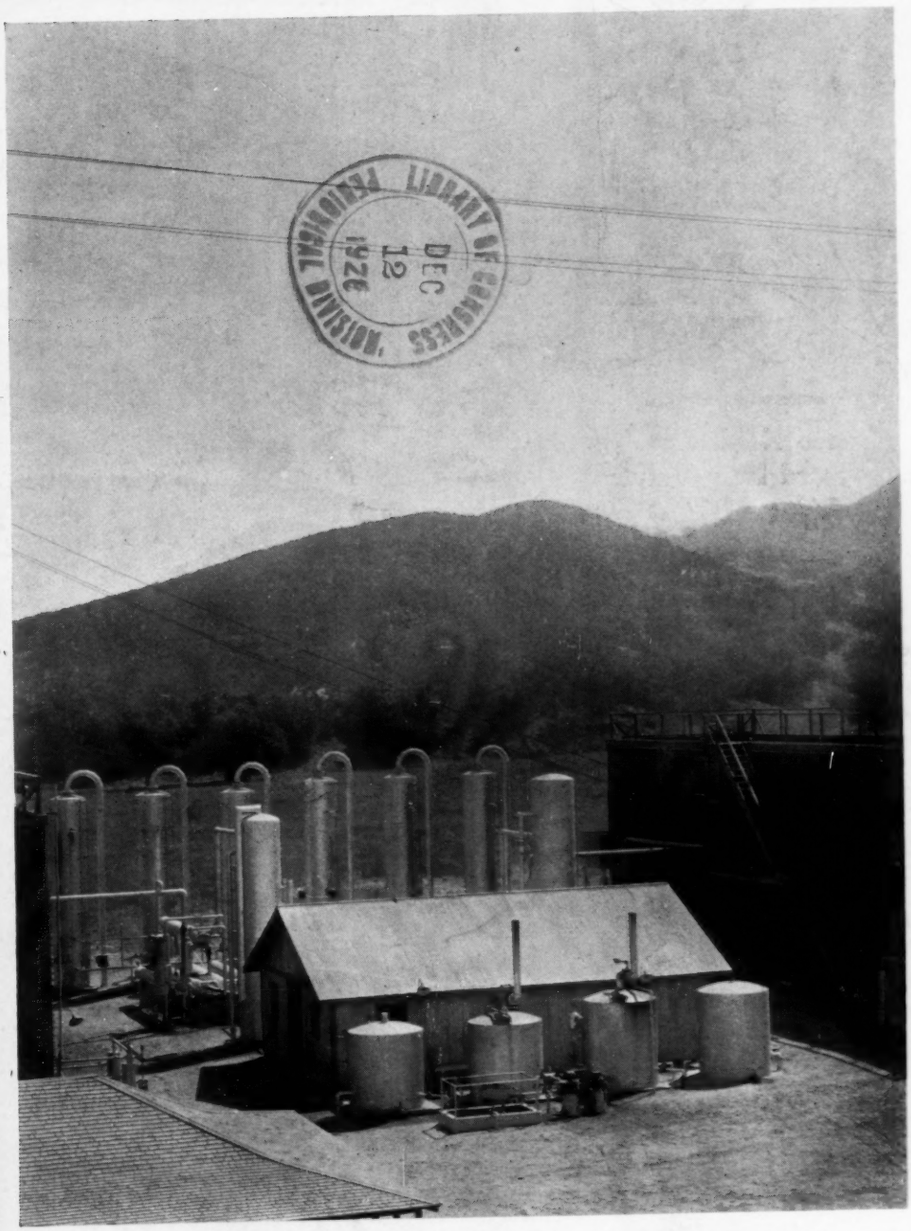
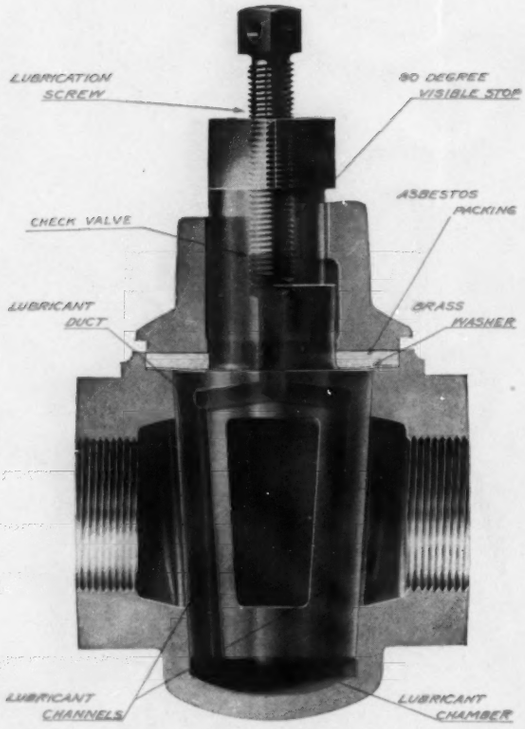


Newhall, Calif., high pressure absorption plant of Standard Engineering Company, treating dry gas from Taft and Ventura fields. Potential gas capacity is 60,000,000 cu. ft. a day.

20 Cents
the Copy

A MONTHLY JOURNAL DEVOTED TO THE
WESTERN GAS & APPLIANCE INDUSTRIES



Bearing Surfaces Always Protected

The Merco Nordstrom Plug Valve operates under constant lubrication. Special lubricants, compounded to resist dissolution and melting, cover the bearing surfaces with a protective film. A pressure screw applies lubricant at will. Acids, alkalies, grit, scale and other injurious substances are effectually excluded.

It Won't Stick—It Won't Leak

Merco Nordstrom Lubricated Plug Valves
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In Governor Pits
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On Fire Control or Service Lines
As Curb Cocks
On Pressures from Few Ozs. to 100 Lbs.

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Gas Lines
Steam Lines
Feed Water Lines
Tar Lines
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On Natural Gas—
On Well By-Passes
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Transportation Lines
On Pressure as High as 400 Lbs.
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MERCO NORDSTROM VALVE COMPANY
SUBSIDIARY OF THE MERRILL COMPANY

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Merco Nordstrom PLUG VALVES

Write for prices and complete information on this TEEPLE *Thermostat*

The TEEPLE—

is the original simple, low priced, room temperature thermostat

Over 10,000 TEEPLE room temperature thermostats are in use on the Pacific Coast. Simple in design, they combine accuracy and permanent reliability

The large number of installations made during the past few years is the best proof of the widespread demand for the TEEPLE thermostat, and its popularity with home and building owners.

Quantity production has brought the price of TEEPLE controls down to a point where sales are largely a matter of suggestion.

We also manufacture magnetic gas valves and complete equipment for the automatic control of gas, steam, hot water, air, oil, or electric heating systems or for refrigeration control.

Write us concerning your temperature control problems—we design and manufacture special equipment.

L. R. TEEPLE COMPANY [*formerly TEPCO Mfg. Co.*]
540 East 9th Street , , , , Portland, Oregon

TEEPLE TEMPERATURE Controls

TEEPLE

Pacific Coast Distributors for Honeywell Heating Specialties Co.

WESTERN GAS

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Official Publication Of The
Pacific Coast Gas Association

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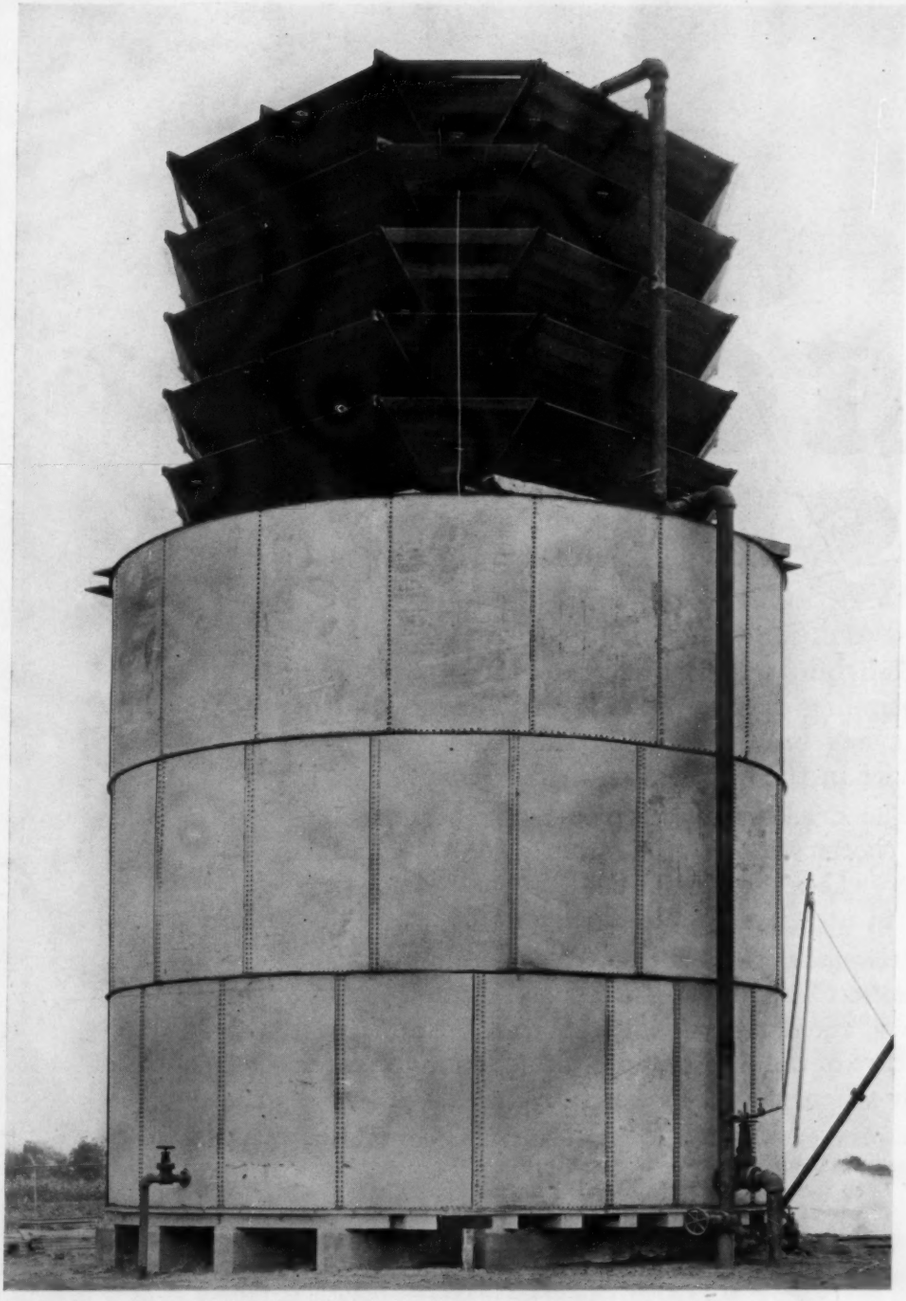

Braun Atmospheric Cooling Towers may be erected on top of storage tanks, with resultant saving in space.

C. F. BRAUN & COMPANY
Manufacturing Mechanical Engineers
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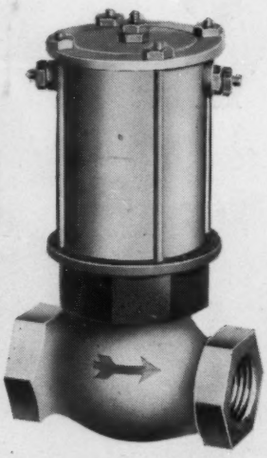
THE WATCH DOG OF YOUR GAS METER

THE Erickson TEL-O-STAT

The culmination of 41 years of thermostatic experience



THE Erickson GAS-O-TROL

The first successful thermostatically operated gas valve

ERICKSON GAS-O-TROL

Reliability is the first essential of any heat controlling device. Here is an Erickson control that has been proven by six years of reliable service in the gas heating field.

The Erickson Gas-o-trol was the first successful thermostatically operated gas valve and is today the leader in its field. More Gas-o-trols are in use than all other valves combined.

In operation the Gas-o-trol is actuated by the Erickson Tel-o-stat—the most attractive low-priced room thermostat yet made. An original feature of the Tel-o-stat is the signal light which tells when the furnace is burning.

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Branches or Major Dealers with stocks in all principal Pacific Coast cities

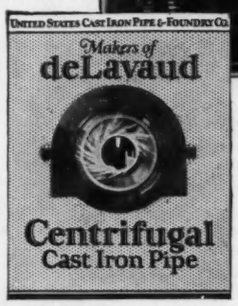
Nearing the North Shore. Showing the dredger, pile drivers and cradle.

U.S. Flexible Joint Pipe for Submarine Lines

The installation shown here was made for the Delaware River Water Company by Frederick Snare Corporation of New York and Philadelphia.

The line, which consists of 64 lengths of our 16" Flexible Joint Pipe, was laid under adverse tide conditions at a maximum depth of 26' at high tide.

Under the water pressure test only four small leaks developed and these were easily recaulked by a diver. The water was then pumped out and an air pressure of 125 lbs. per square inch put on the line and maintained without evidence of leakage anywhere.



"Our new handbook of Cast Iron Pipe for gas service is now ready. It contains valuable data for gas engineers. We will be glad to send you a copy upon request."

United States Cast Iron Pipe and Foundry Company

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Prices For Your Budget on the

R S De-Emulsifier

The following table gives the sizes of the standard R S De-Emulsifier units, their estimated capacities and the size of Water Gas plants they will serve.

These prices do not include any of the water, steam and drain piping nor the storage tanks for the emulsion.

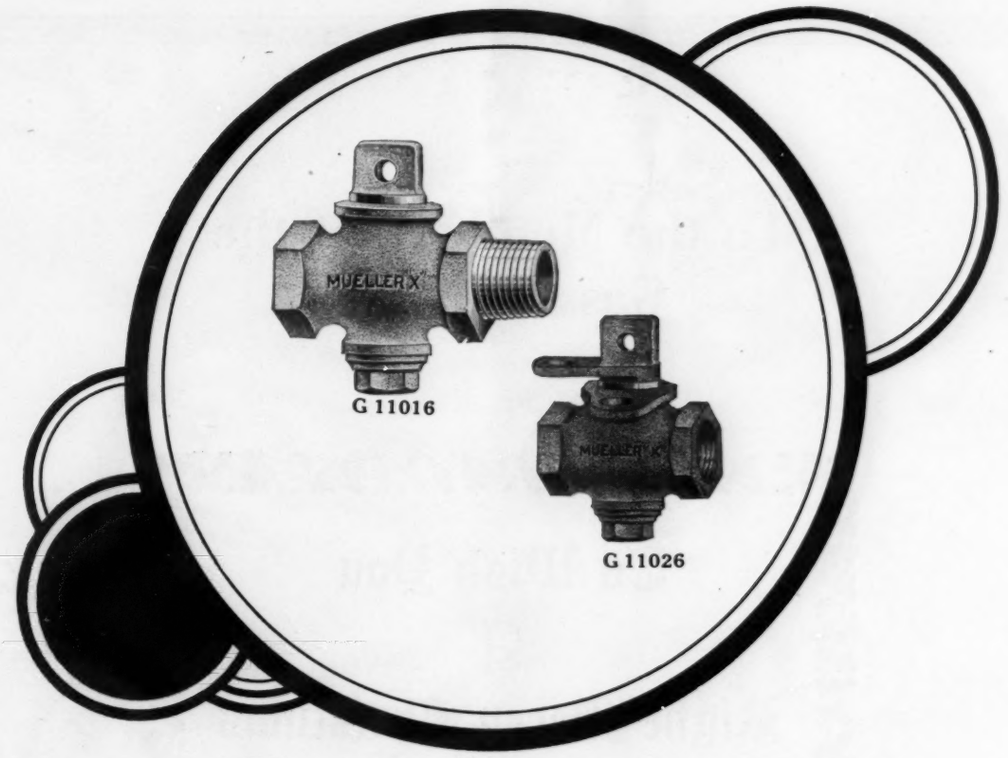
The R S De-Emulsifier is furnished complete as specified in our detailed specifications.

R S De-Emulsifier Number	Water Gas Plant Capacity Per Day	Tar Produced Per Day Gallons	65% Emulsion Gallons	Number of Treatment Units	Batches Treated Per Day	Price F. O. B. Our Factory
A 1	100 M	40	114	1	1 every third day	$ 900.00
A 1	250 M	100	286	1	1 every day	900.00
A 1	500 M	200	572	1	2 every day	900.00
A 2	750 M	300	858	2	1 each unit every day 2+ 2 each unit twice a week	1675.00
B 1	1 MM	400	1140	1	1 every day	1650.00
B 1	2 MM	800	2280	1	2 every day	1650.00
B 2	3 MM	1200	3420	2	2 on the first unit 3 1 on the second unit	3020.00
B 2	4 MM	1600	4560	2	4 2 each unit	3020.00
C 1	5 MM	2000	5700	1	1 every day 1+ 2 twice a week	4050.00
C 1	6 MM	2400	6840	1	1 every day 1+ 2 every other day	4050.00
C 1	7 MM	2800	7980	1	2 every day	4050.00
C 1	8 MM	3200	9120	1	2 every day	4050.00
C 2	9 MM	3600	10260	2	1 each unit every day 2+ 2 each unit every other day	7740.00
C 2	10 MM	4000	11400	2	2 on the first unit 3 1 on the second unit	7740.00
C 2	15 MM	6000	17100	2	4 2 each unit	7740.00

We would like to study your tar emulsion problem and submit complete detailed specifications

We Know We Can Save You Money

STEERE
ENGINEERING CO.
DETROIT, MICHIGAN



Now forget gas stop troubles

Just as soon as you specify Mueller Gas Stops you can forget gas stop troubles. Mueller Stops are made right. Stringent tests and rigid inspections insure Mueller uniform quality—year in, year out. The extra years of reliable service which the name Mueller stands for is an extra value which you get, but which adds nothing to the price.

Mueller gas service goods are backed by 69 years of experience. They are used and recommended by an overwhelming majority of gas companies.

Typical of the complete line of Mueller Gas Stops are those illustrated above.

[Mueller makes other gas service goods to meet all requirements. Prices and descriptions on request. Write for details]

MUELLER CO.

(Established 1857)

San Francisco: 1072-76 Howard Street Los Angeles: 2468 Hunter Street

Factories: Decatur, Illinois; Port Huron, Michigan

Canadian Factory: MUELLER, Limited, Sarnia

MUELLER

283

To the Members of the Gas Industry

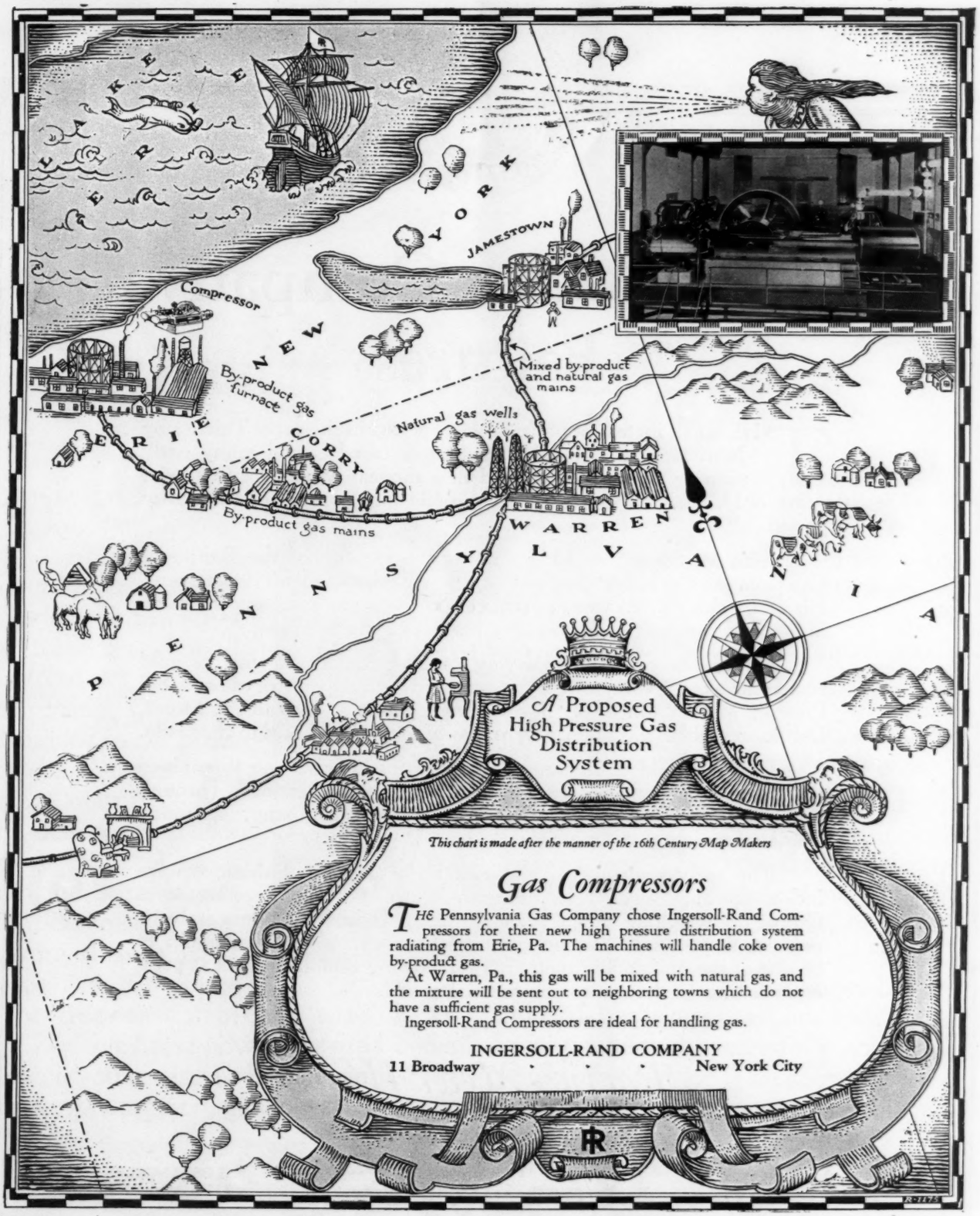
To Wish You
A
Right Merry Christmas
and a
Happy New Year

SAFETY GAS MAIN STOPPER CO.

Pacific Coast Representative: C. B. BABCOCK CO., San Francisco

Cable Address: GASTOPPER, N. Y.

523 Atlantic Ave. **Brooklyn, N. Y.**



Gas Compressors

THE Pennsylvania Gas Company chose Ingersoll-Rand Compressors for their new high pressure distribution system radiating from Erie, Pa. The machines will handle coke oven by-product gas.

At Warren, Pa., this gas will be mixed with natural gas, and the mixture will be sent out to neighboring towns which do not have a sufficient gas supply.

Ingersoll-Rand Compressors are ideal for handling gas.

INGERSOLL-RAND COMPANY
11 Broadway · · · New York City

850-C

Ingersoll-Rand

Early Meter Company Failures

THE small meter shop which was opened in the early Thirties by John Rogers and John M. Slaney fared as did many early pioneer firms. It succeeded in a modest way for a few brief years only, then its history is lost in the dim records of that early period.

John M. Slaney in 1834 entered the employ of the Baltimore Gas Company as superintendent of a newly created meter department. His son, John M. Jr., was apprenticed to the same company in which father and son operated the meter branch of the business.

In 1850 when California was startling the world with its gold rush, the elder Slaney, with his son and two others, organized the Phoenix Meter Company. A shop was opened at 44 Halliday Street, Baltimore, where gas meters were manufactured and sold to the trade.

During President Buchanan's administration civil war threatened the nation and the depressed value of money became serious. Through no fault of the management the Phoenix Meter Company, like many smaller firms of that time, failed.

The early struggles of meter manufacturers in Baltimore were indeed discouraging. Yet from such failures new ventures are born. Out of the wreckage of the Phoenix Meter Company came a stalwart organization—an institution destined through capable leadership to be one of the oustanding meter manufacturing establishments at present existing in the entire commercial world.

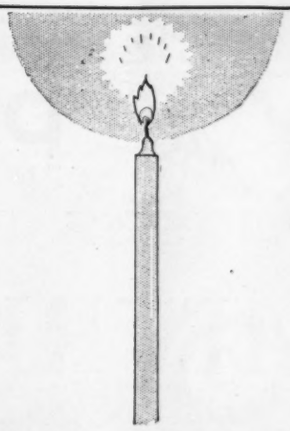
Pacfic Meter Works

of the
American Meter Company, Inc.
Northwestern Representative

SAN FRANCISCO
495 Eleventh St.

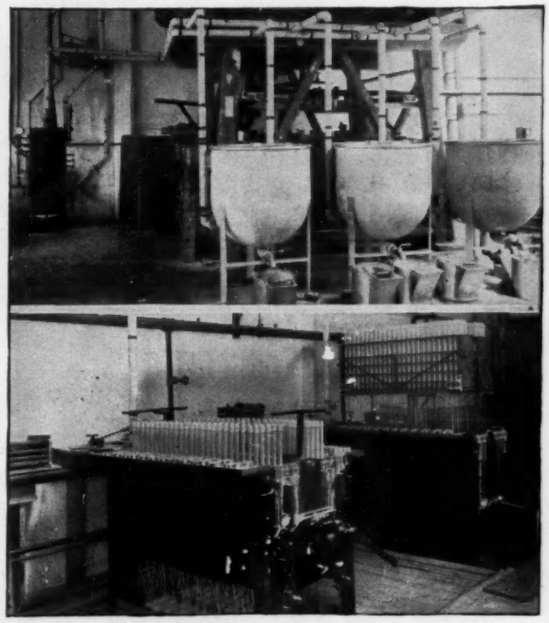
PORTLAND
Northwestern Gas and Electric Equipment Co.

LOS ANGELES
2118 Atlantic St.



Making Christmas Candles

The wax is melted by steam from a gas-fired boiler



PERHAPS the candles upon your table or in your church were made by one of the machines pictured here. For all the candles made on the Pacific Coast are moulded in the plant of the "Master Candle Company," San Francisco. And like so many other modern industrial plants that do fine manufacturing, this company uses gas to supply the necessary clean, safe heat.

The five-horse-power gas-fired boiler which you see in the background of the upper photograph, generates the steam for melting wax in the 100 gallon kettles. From these kettles the wax is drawn and poured into steam-heated candle moulding machines.

PG and E engineers will serve you

If *you* have any industrial heating problems, the PG and E engineers will gladly assist you in solving them. They have information available on industrial heating operations which have been conducted successfully for many years. This service is at your command without cost or obligation on your part.

PACIFIC GAS AND ELECTRIC COMPANY

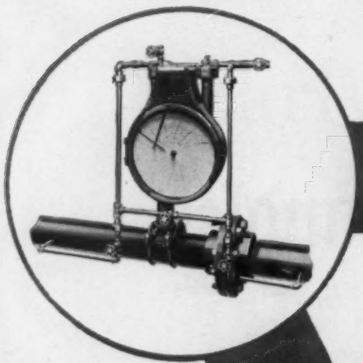
P·G·and E·

Owned · Operated · Managed
by Californians

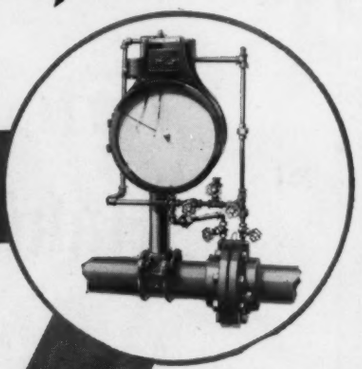
PRS 20306 Dec

IF IT'S DONE WITH HEAT YOU CAN DO IT BETTER WITH GAS

Obtain the Height of ACCURACY *and* PRECISION in Measuring Gases and Liquids with METRIC orifice METERS



Metric Orifice Meter Installation for Light Oils or Water, 2½ and 8 Pipe Connections.



Metric Orifice Meter Installation for Gas --Flange connections.

They put SURE in meaSUREment because of these unexcelled characteristics and advantages:

Small area of surface affected by friction

Minimum number of moving parts

Small angle of movement of pen

Correct length of lever arm

Uniform area of mercury pots

Large area of float

Oil---

With a total weight of less than 40 pounds and with all parts of a size to be installed and handled with small wrenches or pliers, this little Metric is taken everywhere into the oil fields and installed in a great variety of ways to do all types of measuring work of all grades of oil—**accurately, dependably.**

Measure With Metrics

Westcott & Greis, Inc.

Sales Service

Dallas, TULSA, Los Angeles

Gas---

These meters meet all demands in gas measurement from casing head to vacuum line,—from production to consumption and at every station in between,—with a precision of operation that approximates perfection. Throughout the range of service variation they give results that are **extremely accurate.**

Metrics Mean MeaSUREment

Write for 1926 Edition of the Orifice Meter Bulletin

METRIC METERS

METRIC METAL WORKS

of the American Meter Company-Inc.

ERIE - PENNSYLVANIA - U-S-A

"DADDY says we can have a big Christmas tree again this year 'cause he's had work all year. Daddy works at Coopers where they make big gas engines to pump gas with, and Daddy says the men who buy the engines found out that Coopers build 'em so good that they ordered an awful lot, and so lots of little kids like me can have a Christmas tree this year. Hope all them men that buys engines have a Christmas tree at their house and are as happy as me and Mother and Daddy is."—and all the rest of us at the Cooper Plant wish the same.

THE C. & G. COOPER COMPANY, MT. VERNON, OHIO

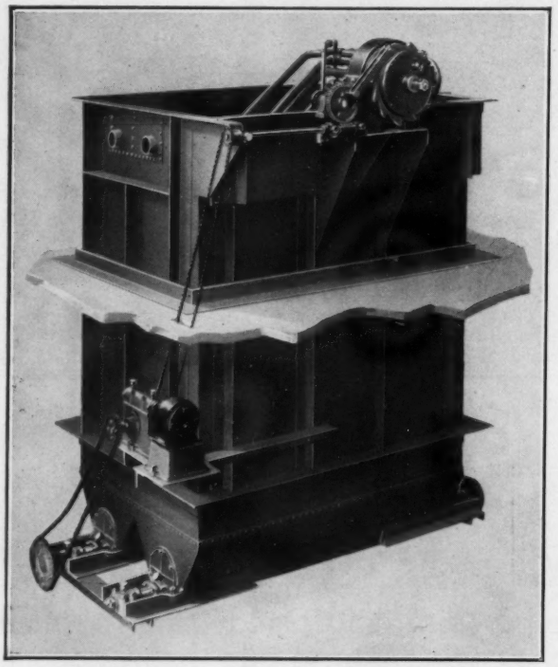
1605 Kirby Bldg., Dallas **504 Kennedy Bldg., Tulsa**

649 South Olive Street, Los Angeles

COOPER

LAMPBLACK

can be handled
cleanly, economically and profitably
by Oliver-Borden Thickners
and Oliver Filters



Oliver-Borden Thickner with Steel Tank

The Pacific Gas & Electric Company
The Portland Gas & Company
The Los Angeles Gas & Electric Company
The Central Arizona Light and Power Company
The New Bedford Gas & Edison Light Company

all use Olivers

Oliver Continuous Filter Co.

SAN FRANCISCO
503 Market Street

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E. L. Bateman, The Corner House

Are You Satisfied With Your Gas Holder Paint?

Put your Gas Holder painting problems up to us! For years W. P. Fuller & Co. have studied this question.

Study and experience have produced special Fuller products for all Gas Holder surfaces: Lower lifts, upper lifts and shell.

For the new type Holder without water-seal, the problem is largely one of metal protection and weather resistance, a subject thoroughly covered in our Industrial Bulletin Number One.

Gas Holder Paints supplied in red, metallic, light gray, dark gray and olive green. Detailed information on request.

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Engineers, Executives: We will gladly mail you complete file of Industrial Paint Bulletins to date and put you on list to receive future issues. File-size for ready reference. Invaluable for technical use.

OUR SERVICE DEPARTMENT will make a special report on any industrial painting problem.

W. P. Fuller & Co.

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Branches in 27 Pacific Coast Cities
Factories in San Francisco, Los Angeles, Portland

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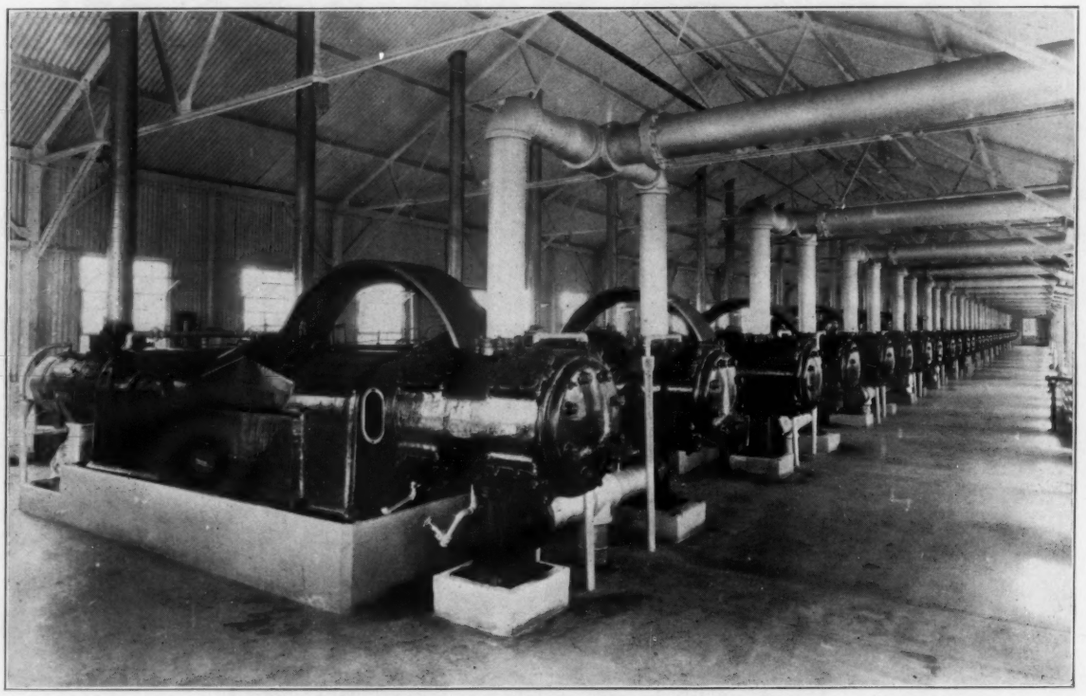
CLARKS



A Regular Clark Month

Oliver Field sent in an order for a 165 for his Huntington Beach Plant.

Art White of the Brea Canyon ordered his second 80.

We completed the Holly Oil Co. high pressure plant.

Hartwell Bradford of the West Coast telephoned in for a 165 (his sixth purchase).

Continental bought a 120 H. P. Senior Drilling Engine.

One of the "Big Five" picked up two 165's from our Warehouse.

And back at Olean the CLARK factory is going twenty-four hours a day to keep up deliveries.

Engines and Compressors
40 to 200 H.P.

SMITH BOOTH USHER CO.

CONSTRUCTION
ELECTRIC
GAS COMPRESSION
INDUSTRIAL
METAL WORKING
MINING
OIL FIELD
PUMPING
ROADMAKING
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WOOD WORKING

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PIPE - VALVES - SUPPLIES

SAN FRANCISCO
50 FREMONT STREET
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LOS ANGELES
228 CENTRAL AVENUE
TRINITY 6911

Drilling Engines
60 to 125 H. P.

Sold and Served in California by California Business Men who are here to stay

A Word *of* Greeting

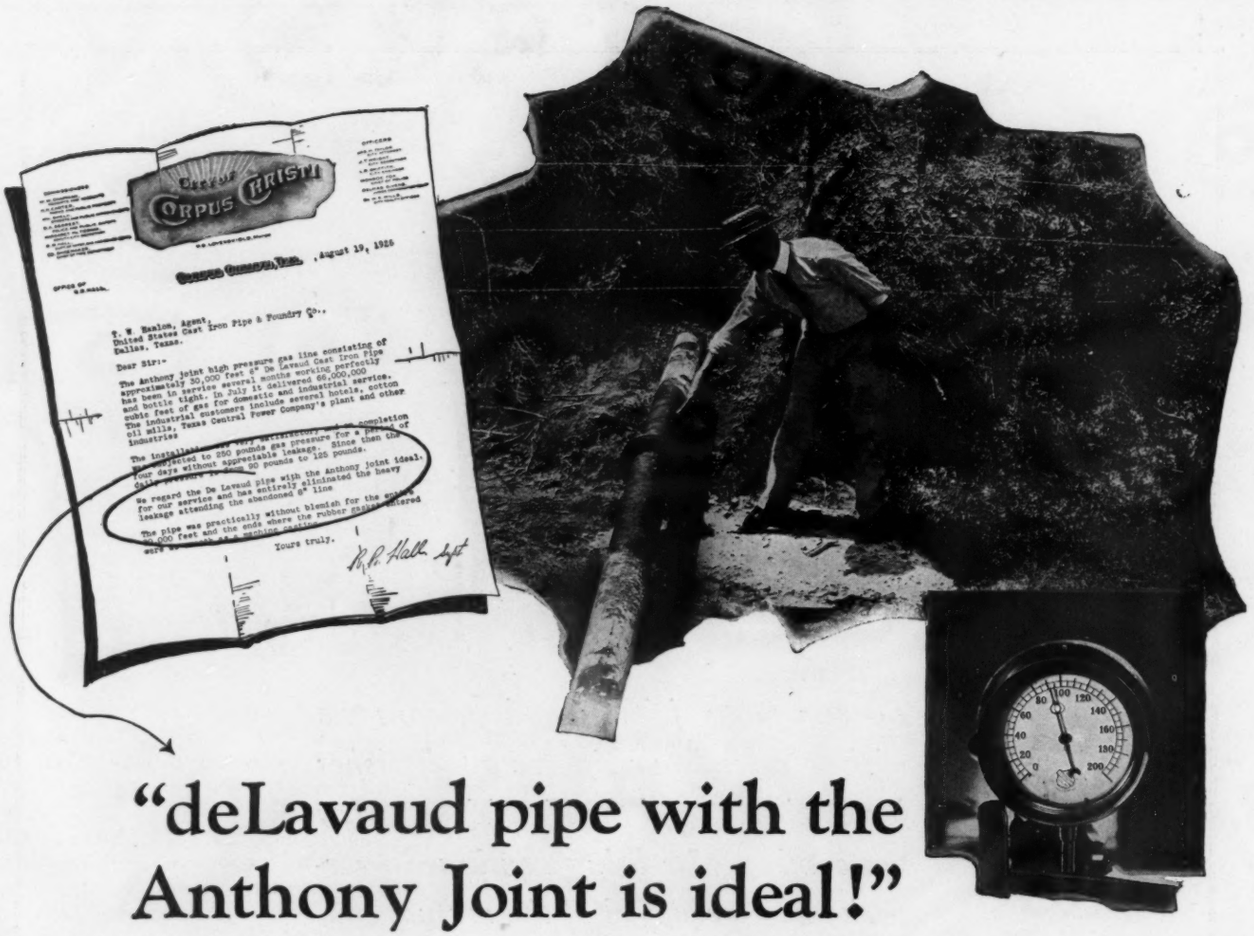
To our many friends and patrons we wish to extend our sincere good wishes for Christmas and the New Year. May the coming year bring continued prosperity and a renewal of the mutual confidence we have enjoyed in the past.

WESTCOTT & GREIS, INC.

1945 Santa Fe Ave. Los Angeles, Calif.

W E S T C O T T & G R E I S , I N C .

Sales and Service


City of
CORPUS CHRISTI
August 19, 1926
Dallas, Texas.
Dear Sir:-
The Anthony joint high pressure gas line consisting of
approximately 30,000 feet of De Lavaud Cast Iron Pipe
has been in service several months serving perfectly
and both tight. In July it delivered 66,000,000
cubic feet of gas for domestic and industrial service.
The industrial customers include several hotels, cotton
oil mills, Texas Central Power Company's plant and other
industries
four days without appreciable leakage. Since then the
We regard the De Lavaud pipe with the Anthony joint ideal.
for our service and has entirely eliminated the heavy
leakage attending the abandoned S line
The pipe was practically without blemish for the entire
Yours truly.

"deLavaud pipe with the Anthony Joint is ideal!"

30,000 feet of pipe under a daily gas pressure of 90 to 125 pounds

THE progressive city of Corpus Christi, Texas, with its fine new Port, gives this unqualified endorsement of deLavaud Centrifugal pipe and the Anthony Joint.

There are nearly 2,000,000 lengths of deLavaud in use today.

Our new handbook of Cast Iron Pipe for gas service is now ready. It contains valuable data for gas eigineers. We will be glad to send you a copy on request.

United States Cast Iron Pipe and Foundry Company

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Cleveland: 1150 East 26th Street
Minneapolis: 6th St. & Hennepin Ave.
New York: 71 Broadway
San Francisco: 3rd & Market Sts.
Pittsburgh: 6th & Smithfield Sts.
Dallas: Akard & Commerce Sts.
Kansas City: 13th & Locust Sts.

General Offices:
Burlington, New Jersey

WESTERN GAS

A Monthly Journal of the Gas, Gas Appliance and Natural Gasoline Industries in the *Eleven Western States*

A Display Department *to* Aid Gas Users *and* Builders

By GEORGE H. FINLEY

IN many ways Southern California is entitled to be called the "white spot" of gas utilization. Abundant supplies of natural gas, and equally available supplies of oil for manufacturing a blended product of high fuel value, have reduced sales resistance to the vanishing point. Gas for cooking, gas for house-heating, gas for industrial utilization—in every field the effect of low costs of gas service, backed by efficient company operation is seen in the high proportion of gas users. Competitive fuels have a hard row to hoe in Southern California, which is as it should be.

But this wide use of gas brings a problem in its wake, in the need for educating the gas-using public to what is good gas-burning equipment. It resolves itself into selling not more, but better appliances. To a regrettable degree the gas users of this section have been accustomed to buying gas appliances on price. Speculative building, which has reached new heights in Southern California, has added to the problem, for gas equipment in this type of construction is often bought as an afterthought, at the cheapest figure possible.

One of the most constructive moves looking to the remedy of this situation is being made this month by the Los Angeles Gas & Electric Corporation. This utility is setting up a department which will operate as an educational agency to gas users, architects, builders, and all who want counsel on gas appliances.

On the eighth floor of the corporation's new general office building an entire wing is being given over to a gas appliance display, which in extent and quality will rival anything of the kind in the West. Roughly 10,000 square feet of floor space has been allotted, in which there will be displayed over 200 pieces of gas-burning equipment, including ranges, water heaters, incinerators, radiant type heaters—and a separate section will be devoted to gas furnaces, which will be described later.

Those in charge of outfitting this department say that nothing but quality merchandise will find a place in it, and their statement is borne out by an inspection of the first units which have been installed. The exhibit will be demonstrational—that is, all appliances will be piped and connected. One motive in mind is the education of gas users in fuel economy and one hundred per cent utilization of every appliance.

MANUFACTURERS CO-OPERATE

Manufacturers and dealers are co-operating in assembling the display, each being permitted to display several models representative of good merchandise, though space limitations preclude the showing of entire lines. Models on exhibition may be changed from time to time, in order that new goods may be shown at all times.

The display represents a service to manufacturers and dealers as well as to builders and gas users, for it provides a down-town show room to which the manufacturer may take his prospect to see his line in operation. Manufacturers realize that the inclusion of merchandise in this display places the gas company's stamp of approval on the sale of the goods to give effective utilization of gas, and are hastening to have their lines represented.

Every means will be used by the company to popularize this display. Company advertising and employee contact will contribute to this end, and stickers will be attached to gas bills in order that consumers may know of the service available to them. An unusual appliance display is being designed for the main floor of the building, to serve as a "come-along," reminding the public of the extensive eighth-floor department.

Special attention will be given architects and new home builders. Proper piping of homes for complete gas needs, in keeping with the American Gas Association's Blue Star Plan, will be stressed, to do away with current practices of installing piping for kitchen use only. The man to be reached in this regard is the builder himself, or the architect, for plumbers and fitters are frankly not interested; the gas pipe order plays too small a part in the plumbing bid on any one home. The builder and architect will be informed that unprejudiced advice on piping, and on the proper appliances to do the work called for, may be had from the new department, and a staff sufficient to handle the inquiries developed will be maintained.

A service will be offered to architects and builders, consisting of a collection of first class kitchen plans, looking to the designing of kitchens, screen porches and laundries with adequate space for proper gas equipment. Thousands of homes are built in Los Angeles today without space

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Employment *and* Labor Turnover

Some Practical Remarks Aimed at the Men Who Employ or Supervise Others

By FRANK J. GARTLAND
Production Engineer, Public Service Company of Colorado

¶ The human element, says the engineer who wrote this article, deserves the same close consideration that is accorded other operating factors such as materials and machines. Mr. Gartland presented this paper before a recent meeting of the Colorado Utilities Association.

CONSIDERATIONS affecting the interests of the personnel of any company are more and more being given their proper place in industrial management. To see the correctness of this policy one has but to look to the more progressive and thoughtful employing concerns, not only because social opinion requires that employers should squarely face the human problem in industry, but also because scientific study and attention to the selection and development of employees, and of cooperation with employees, furnish one of the most fruitful sources of increased dividends for the stockholder by increasing the general overall business efficiency.

In order to properly study their own particular personnel problems, many employing concerns are establishing personnel or employment departments which function just the same as the operating or finance departments. Is it not just as important that the human element or human engineering department be given the same consideration and be on a par with the finance, sales or mechanical department and its head be of equal calibre with other executives?

THE EMPLOYMENT PROBLEM

Let us briefly consider the employment problem as a strictly business or engineering problem. In buying a piece of machinery—a turbine, boiler, gas apparatus, pole digger, trench machine, etc., much thought is given by engineering department heads and management as to whether each machine is that which is best suited to the work which is to be done; whether it has sufficient strength, if it is efficient to as nearly perfect a degree as possible. Perhaps experts are employed to advise upon the matter, and many times much money and time is spent, simply as a matter of good sound business policy to determine all the facts, to prove that the investment to be made is made wisely and will pay dividends to the stockholders. The same is true as regards materials—a centralized purchasing department is maintained, headed by experts in their line; materials are purchased from carefully prepared specifications. Very often tests are made to show that materials are as represented and if they are not they are rejected. Many times the specifications themselves are prepared after long, careful study to find the material best suited to the purpose for which it is purchased.

Very often, perhaps we might say far too often, these same precautions are most conspicuous by their absence in the employment of men and women to operate these carefully selected machines, or to use this high-priced, very efficient material. Would it be reaching out a bit too far to say that possibly we are stopping where we should begin? Let us consider two public utility properties in more or less the same locality, which would both give the same operating conditions. They may be equipped with identical machinery and ways of handling raw materials; yet in the course of a very short time there will be a vast difference in the quantity, production and efficiency of these plants if the personnel is not given serious thought. Is this phase not one of serious consideration from an operating standpoint?

If one of the above plants were operated by the old school idea of "bring on the men" and the other along scientific lines of carefully choosing its men, the difference in practical results would be so great that it would be unbelievable. In fact, this condition alone would often spell either success or failure.

The unscientific operator or manager believes that the overseeing of handling of orders, materials and machinery is his particular job and that the men who actually perform the work are necessary evils. When this particular manager is confronted with quantity and cost figures he will blame the employees and say, "I haven't the same kind of employees that Bill Jones has"—which is absolutely correct. But he has not given Bill Jones, a scientific operator, credit for having developed a particular kind of employee, essential to assume responsibility of good operation.

From the view-point of the writer the responsibility of handling men from the time of their original selection is a most important item of good operation and management. While the man who actually employs may or may not be the operator or manager, he must have two separate and distinct qualifications: He must have a special knowledge of the work he is overseeing or perhaps special mechanical ability, and a certain amount of executive ability. The man who administers in an employment capacity should be one who can investigate and judge impartially, have considerable tact, show a sincere interest in human affairs and possess a personality which inspires confidence.

It is almost impossible to obtain any reliable information as to the actual cost in dollars of employing and breaking in a new employee. Authorities on the subject vary in their estimates from $30.00 to $200.00, depending upon class of work to be done. But we all know that it does cost money and should be avoided as much as possible.

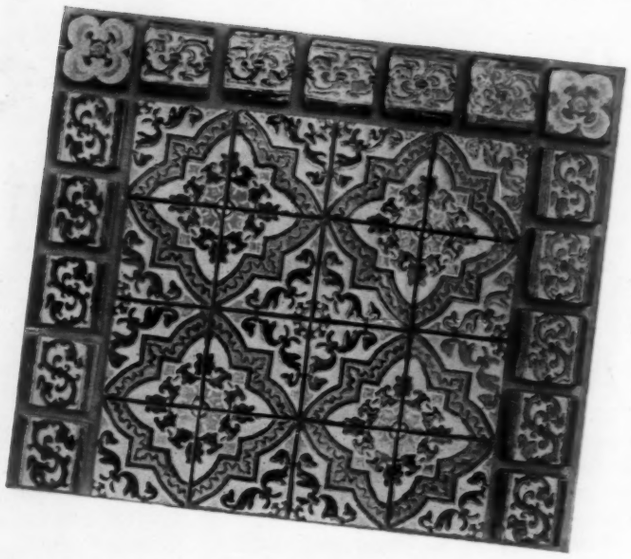
SELECTING THE RIGHT MAN

While it is quite important to select the right man for the right place so that a square peg may be chosen for a square hole and a round peg for a round hole, it is in my mind far more important to properly take care of these men when they enter into their new work. Many a good man has been spoiled and discouraged by wrong initial treatment, and on the other hand, many an improperly selected man has been made useful and contented by the proper guidance and training. This happy result is much more possible if the boss is a student of human nature, perfectly fair and firm in his dealing with men, imaginative enough to be progressive and yet sufficiently conservative not to break away from his old moorings until he can see a clear coast ahead—lest he have to scramble back and cause confusion and discontentment. Standing between his employees and their employer he can, if he is the proper man, be fair to both.

STUDY TURNOVER CAUSES

Scientific management and efficiency methods have made it possible for us to appreciate in a way how much it means to know yourself. To know your own faults and the faults of your men is the first step forward in the correction of

(Continued on Page 53)



Gas Rejuvenates *an* Ancient Industry

By H. E. DAVIDSON
Southern California Gas Co.
Glendale, Calif.

THE brilliantly glazed pattern tile produced in Spain during the period from the fourteenth to the seventeenth century, and which was so lavishly used in the Spanish architecture of that time, is one of the most beautiful decorative materials ever developed. It is the result of the untiring efforts of generation after generation of tile makers, each striving for perfection. Unfortunatey, however, the old art of tile making in Spain has gradually declined until today it is practically lost.

The Spanish Pottery of Los Angeles has now undertaken the manufacture of decorative tile which will stand comparison with the product of the old Spanish makers, and as far as possible, is following the original methods. Thus the work is done by primitive hand processes, as it was centuries ago; but in the most critical stage of treatment, that of firing the ware, only gas, the most modern of fuels, is used.

The process followed at this plant for pattern tile is one of the two used by the early Spanish craftsmen, and is known as the "cuenca" method. In its use the areas to be covered with the various colored glazes are separated by thin clay ridges formed by impressing the plastic clay body with a suitable die; these ridges prevent the intermixture of colors when the tile is fired. This is done in a standard down-draft kiln, equipped with high pressure bunsen type gas burners.

All of the tile produced at this pottery are reproductions or adaptations of authentic Spanish pieces of the best periods, not only in design but also in shade and texture of glaze; the duplication of the latter was attained, however, only after experimental work extending over fifteen years. The patterns vary from comparatively simple ones to others that are quite intricate. Only five colors are used—a dull white, a rich emerald green, a cream yellow, a brilliant cobalt blue, and a light brown. The clay base, which may not be entirely covered with colored glaze, is a warm Venetian red. As a result of the "cuenca" method of manufacture, the glazed surfaces are not flat, but are slightly curved; this results in a play of reflected and refracted light which adds greatly to the brilliance of the glaze.

As a decorative medium, this tile is suitable for simple borders around fire-

(Continued on Page 56)

The exquisitely formed tile shown on this page were fired by gas. Following are a few particulars on their coloring and design: Top, left—Griffon design in blue and white. Original from the Convent of Mont Sio. Top, right—Elaborate five color design. Original from collection of Dr. Martorel of Barcelona. Left—Design in four colors. Original from the Convent of Our Lady of Jerusalem. (17th Century.) Above—Octagonal floor tile with design in green. Original from a convent occupying a portion of the palace of the Dukes of Gandia. Right—Conventionalized parrot design in five colors. Original from the Cathedral of Zaragoza.

Automotive Transportation *in the* Modern Gas Company

As chairman of the Transportation Bureau of the Pacific Coast Gas Association the author of this article has had an excellent opportunity to survey the automobile problems of the Western gas industry.—Editor.

By H. W. DRAKE
Portland Gas & Coke Company

AUTOMOTIVE transportation is a comparatively new branch of the gas industry. In 1900, the units operated by all the gas companies on the Pacific coast were, no doubt, less than are now operated by the smallest concern.

Gas companies no longer confine their activities to limits of a particular town or city but they reach out over county and state. Consequently the transportation problem is of vital importance. Automotive transportation has played and is playing its part in making the gas business. It would be next to impossible for any company to attempt to spread its activities over hundreds of square miles were it not for automotive transportation. From the fast, easy-riding automobile to the slow, heavily loaded truck, there is no gap that has not been filled; there is an automotive vehicle for every purpose.

Times have changed and today the dispatcher does not give second thought to a 30-mile haul or trip, whereas, in days gone by, hauls of this nature would go to the railroad.

The importance of this phase of the gas industry can probably be realized more readily if we first point out the approximate size of some of the fleets. Los Angeles for instance, with three companies, operates more than 1200 vehicles. San Francisco, with a single company, operates more than 1400 vehicles, and other cities such as San Diego, Portland, Seattle, Tacoma, etc., all with fleets of proportionate sizes, swell the total to 4000 or more automotive vehicles. When thinking in terms of dollars and realizing that the cheapest of these vehicles is not less than $600 and the largest not less than $6,000.00, we can visualize the value of automotive transportation equipment in the service of the gas companies on the Pacific coast.

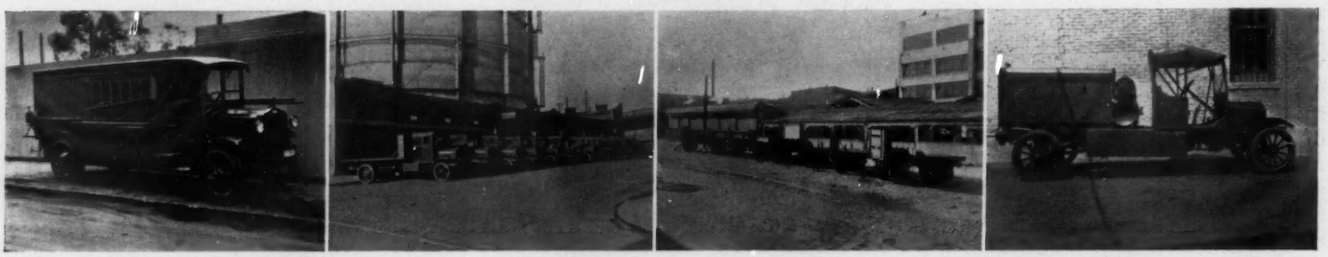
Those who are responsible for the selection of automotive equipment have a very difficult problem to solve. This problem can be divided into two subdivisions: First, a certain make and design of equipment for a specific job, and second, the type of work for which this equipment is to be used. There are many different makes of automotive equipment, each of which has incorporated a number of features that are supposed to be superior to all other makes. The manufacturers are endeavoring to engineer the best equipment possible to be built and when a group of such intelligent men as those designing trucks cannot agree upon certain principles, it is certain that those responsible for selecting automotive equipment have a task of vast magnitude confronting them.

Not only must recommendations for automotive equipment give full consideration to the advantages and disadvantages of the differently designed and constructed machines, but they must also take into consideration, at the same time, the type of service in which the vehicle is to be operated. It is quite often possible to use vehicles which can be purchased at a low cost on certain jobs. These same vehicles, if put into service in outlying districts, where hills and rough roads are to be encountered, would prove to be a complete failure. But because their operating conditions are ideal, they will be found to give satisfactory service and operating costs. On the other hand, there are certain classes of work which make it necessary to install the very best equipment obtainable. Even then, in many instances, the operation of this type of vehicle is unprofitable.

PERSONNEL PROBLEMS

Because automotive transportation is a comparatively young division of the gas industry and, as a matter of fact, of any industry, we find, particularly on the Pacific Coast, the personnel, in a good many cases, is not qualified to cope with the situation which confronts them. Automotive engineers are scarce and it will probably be some time before the man educated for automotive engineering will reach the Pacific Coast. There are and have been engineers in the gas companies for years and, while they are confronted with new problems daily, the controlling fundamental principles are known and these problems can be solved more readily. When the automotive transportation bureaus have developed engineers of the same caliber as the engineers in the manufacturing end of the gas industry, then, and not until then, will the automotive transportation departments show material progress.

The second cost involved in automotive transportation is the operating cost and while it is affected materially by the nature of the conditions under which the vehicle is operated, as well as the type of the vehicle, it is controlled by



Views shown on this page and the one following are of typical automotive equipment maintained by gas companies in the West. They represent a fleet estimated at 4000 vehicles, which operate for gas companies on the Pacific Coast alone.

LEFT TO RIGHT: Installation truck, Pacific Gas & Electric Company; a fleet of five-ton briquet trucks and two-ton deliveries, Portland Gas & Coke Company; fleet of five-ton trailers, also belonging to Portland Gas & Coke Company; air compressor mounted with three-point suspension on truck chassis with extended frame, Southern Counties Gas Company.

the vehicle operator himself and the maintenance department. Too much care cannot be taken in the selection of vehicle operators. This is a difficult matter, particularly where the vehicle operator is employed on account of his ability as a pipe fitter, line man or salesman, etc. Quite often a good mechanic is not a good vehicle operator but on account of the position which he holds, he is required to operate machines. First consideration is given to his ability as a mechanic and second as a vehicle operator. A poor operator is oftentimes the cause of high cost of operation.

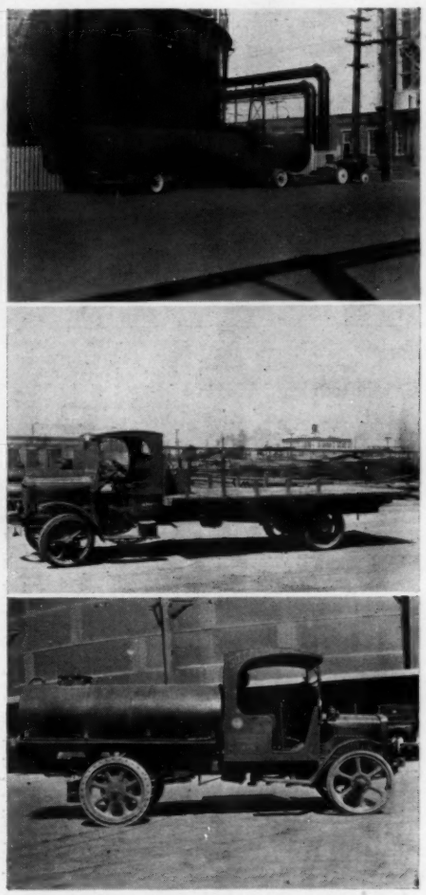
There are no schools which train men to be commercial vehicle operators and consequently the commercial vehicle operators are self-made. Practically all companies are now endeavoring to educate their vehicle operators because they realize that when a driver takes a vehicle out of the garage, he is taking anywhere from $600 to $7,000 of company equipment out onto the street away from supervisors who are responsible, into a field where hazards of all nature exist. These hazards are not only those which might be caused by traffic accidents but they are the hazards which cause unnecessary wear and tear on the vehicle when it is operated in a crude manner. More money is spent for repairs caused in this way, than was ever spent for repairs caused by accidents.

SAFETY FIRST

All progressive companies are also instructing their men with reference to Safety First, and a number of these organizations have started a definite movement among their commercial vehicle operators. Accidents in which the public service corporations are involved are undoubtedly much lower than those caused by the unguided vehicle operators, but it is most certain that no corporation has operated without accidents. It therefore appears that there is much work to be done in connection with Safety First.

The maintenance department has before it a problem of much importance, for in most cases, this department actually controls the cost of operation of automotive vehicles. Much has been written on fleet maintenance and there are as many ideas as there have been articles written. We do know that inspections and timely adjustments are an important factor in reducing the cost of operation. That old adage "A Stitch in Time Saves Nine" if applied, certainly saves a fleet. In the past, the difficulty has been that automotive mechanics are more like surgeons than physicians. In other words, if the repair man realized the amount of money that can be saved by doctoring with timely adjustments, he can be of more value to his organization than the man who tries, as a surgeon, to efficiently rebuild.

The gas industry has realized and capitalized inspections long before automotive transportation was thought of. However, the thought has not been carried into the new department completely and the maintenance man is just beginning to realize this important factor. As this condition exists, we find the inspection department very undeveloped in most organizations, whereas the rebuilding department in these organizations is developed to a much greater degree.



TOP: Semi-trailer and trailer combination handling a heavy load for the San Diego Consolidated Gas & Electric Company. CENTER: Three-ton general storeroom truck, Los Angeles Gas & Electric Corporation. BOTTOM: Drip truck, Southern California Gas Company.

There are, of course, other factors which must be taken into consideration in connection with the operation of a fleet. The fuel for automobiles is one of the largest single costs of operation; yet in very few maintenance departments do you find the fuel consumption carefully observed by engineers and regulated by chemical control. Most of us know that this is the only scientific way by which fuel consumption can be controlled and still we neglect to carry on. Thousands of dollars can be saved this very way.

The importance of lubrication is very often overlooked. A good lubricant is supplied to the vehicle and the rest is left to the mercy of the drivers. Some operators look at their lubrication cost and because it, in itself, comprises only a small portion of the cost of operation, they assume that there is little that can be done to reduce it. Some believe that only a little can be done to reduce the lubricating expense. However, this idea is erroneous and though it may or may not be desirable to reduce this cost it is very desirable to increase the efficiency of the lubrication, because by increasing the efficiency of the lubrication we naturally decrease the amount of wear which takes place on the vehicle. In many cases, an increased cost of lubrication is justified, if the cost for material and labor to replace worn parts caused by poor lubrication can be reduced.

EDUCATING MECHANICS

The mechanic in the shop plays a very important part in the maintenance of a fleet. The foreman may supervise and instruct the mechanic but he cannot obtain the best results if the mechanic does not keep himself informed regarding modern engineering. The fleet operator can increase the ability of his employees by educational meetings and encouraging mechanics to attend night school. Too much effort cannot be spent on this phase of fleet operation.

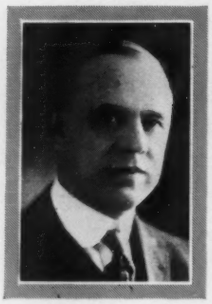
Very few shops are employing apprentices and as a consequence, in a few years, the fleet operator will face a more serious problem than now confronts him. In fact, conditions will be very similar to those which existed when the automobile was first marketed. The fleet operator can, however, prevent this condition by fortifying himself—the employment of educated young men and the training of them to be skilled mechanics being the fortification.

We have mentioned only a few of the important phases of automotive transportation. There are many more of equal importance and much more could be written on the subjects treated. However, now that the automotive division of the gas industry has broken into print, we trust that others concerned will carry on or follow up by expressing their ideas in *Western Gas*. Let us, the automotive men of the gas industry, do our part in making the gas industry a success!

The photographs accompanying this article show the various types of vehicles used by gas companies on the Pacific Coast.

What *the* A. G. A. Appliance Testing Laboratory Means *to* Gas Men

By H. M. CRAWFORD
General Sales Manager
Pacific Gas and Electric Co.



H. M. Crawford

Mr. Crawford presented the accompanying review of the American Gas Association's Appliance Testing Laboratory at the luncheon meeting of the Pacific Coast Gas Association regional meeting held at the Fairmont Hotel in San Francisco on November 18. During the afternoon session of the Commercial Section he spoke further on the same topic; his remarks are based upon a personal inspection of the Laboratory and intimate contact with those at its helm.

THE American Gas Association Laboratory is something in which all Pacific Coast men are interested because we have in the Pacific Coast Gas Association for many years planned such an activity. Gas men will remember the advent of the closed-top range, and the attempt on the part of some manufacturers to sell cast iron tops to fit open top ranges in order to simulate the closed top range, with the result that a very hazardous and dangerous device was created; also a great variety of nondescript heating appliances, mostly unvented, which appeared on the market as soon as gas heating became a factor.

It is not necessary to detail for gas men the troubles which resulted nor the many annoying situations which arose. The Pacific Coast Gas Association wrestled with this problem, and sought for a solution for a number of years. It did not seem advisable for individual companies to attempt to set themselves up as judges on appliances, however pressing the need may have been, and likewise the Pacific Coast Gas Association for obvious reasons faced some difficulties in attempting a cure for these various evils.

Therefore, I say advisedly that the American Gas Association Laboratory is a welcome thing to Pacific Coast men. It went into effect on July 31, 1925, and we now have a national and research testing laboratory in which the entire industry can participate.

PURPOSE OF THE LABORATORY

The initial mission of the laboratory will be to increase the desirability and safety of gas utilization by:

1. Raising construction and performance standards of appliances.
2. Elimination of hazardous and inferior equipment in so far as possible.
3. Creation of greater confidence on the part of the gas-consuming public on the merits of gas-burning equipment.
4. Securing cooperation of gas companies and dealers by their recognition of such types of appliances as have been approved by the Laboratory.

The Laboratory is located on property of the East Ohio Gas Company at the foot of East 62nd Street, Cleveland. Cleveland has four different kinds of gas available, is centrally located, and is a large manufacturing center, all of which made the selection of this site a highly logical one.

At present 20 people are employed in the Laboratory, comprising the director, supervisor, chemist, 11 testing engineers, four stenographers and two fitters. R. M. Conner, formerly of Portland, is the director. G. B. Shawn, formerly of the U. S. Bureau of Standards, is Laboratory supervisor. E. R. Weaver, chief of the Gas Section of the U. S. Bureau of Standards has been helpful in organizing the Laboratory.

The establishment of the Testing Laboratory was made possible by contributions from about 275 of our holding and gas company members. Initial donations amount to nearly $100,000.

Rough computations indicate the following number of gas appliances which are manufactured in the United States:

250 different makes of gas ranges.
100 water heaters.
125 space heaters.
20 garage heaters.
25 steam boilers.
25 gas furnaces, and other miscellaneous appliances, making a total of—
555 appliances manufactured in the United States.

This does not take into consideration the number of different models or types which each manufacturer supplies, running the total well up into thousands.

Specifications for testing are being handled by the general specifications committee of the American Gas Association which will supervise the preparation of all specifications which will be followed by the Laboratory in testing.

This committee has appointed generally, sub-committees all over the country which are working actively in the preparation of these specifications, cooperating with all branches of the industry. The Laboratory work will therefore be guided and directed by the membership at large, and by the best opinion of experts in all branches of our industry.

To date, the list of approved appliances showed that the Testing Laboratory has tested and approved the following:

14 different types of tubing.
1715 gas ranges.
44 space heaters.

This represents one years' testing work.

COMPANY SUPPORT

It is believed that only such appliances as bear the Laboratory approval will be sold by the gas companies. Most of the larger companies have indicated that they will support the Laboratory findings fully. The resolution of the American Gas Association passed at the last Convention recognizes that it is our duty to the public as well as being to our own interest to support whole heartedly the Testing Laboratory and its program.

Furthermore, the Laboratory has the full cooperation of the U. S. Bureau of Standards, U. S. Bureau of Mines, and Public Health Service. It is the sense of the American Gas Association in convention assembled that no gas ranges or flexible gas tubing which do not bear the Laboratory seal of approval will be sold or offered for sale by any member gas company.

It must be born in mind that gas companies in the East are generally directly interested in retail selling, and are large purchasers of appliances.

EDUCATING PUBLIC ON LAB. WORK

Through the Good Housekeeping Institute, and the Government Bureaus, various associations and gas companies, many people are now familiar with the work and its value. The second step will be to educate the gas fraternity as to its objectives and advantages.

The next step is to go to the American

(Continued on Page 48)

Knocking *at the* Door *of* Oakland Homemakers

By
ERNEST W. KIMMELL
Secretary, East Bay Unit
Gas Appliance Society
Oakland, Calif.

PERHAPS no subject has created more discussion in the field of gas appliance merchandising than that of how best to reach the great buying public with your individual sales message.

Since the days when beads and flints were bartered for corn and pelts, it has ever been a mooted question whether to *go out and sell the prospect in the field* or *attract him to the marketplace of trade.*

Whether you adopt either or both of these plans in your selling campaign, it is highly essential first of all to analyze your field. Is there a demand for your merchandise? If not, can a demand be created and has that particular territory in which you wish to sell reached the saturation point?

SELLING BY SERVICE

In the Cooperative House-to-House Sales Campaign on Gas Ranges and Automatic Water Heaters, recently conducted in Oakland, it was planned to analyze and inventory the territory while actively selling from door to door and to win admission to the home, not by the "foot-in-the-door" method, so frequently indulged in, but by offering a real service to the occupant, such as minor adjustments to any or all gas-burning appliances in service.

The Pacific Gas and Electric Company, not being actively engaged in the merchandising of gas equipment, offered to cooperate with the Range Bureau of the local Gas Appliance Society in working out the idea of house-to-house solicitation. An agreement was drawn up with five dealers who sold ranges and automatic water heaters and who were members of the Society.

The Pacific Gas and Electric Company offered to furnish house-to-house salesmen, who would be thoroughly trained at Company expense, before being assigned to the dealer;—also to employ a competent crew supervisor and filing clerk.

The house-to-house men were to be directly employed by the dealer and wholly responsible to him. He was to pay them a commission of 10 per cent on all gas ranges and automatic water heaters sold, with an additional bonus of $2.50 in cases where a temperature-controlled range was installed. A uniform guaranteed salary of $150.00 per month was given each salesman, and the Pacific Gas and Electric Company in turn was to underwrite the dealer against such losses which might accrue after deducting his actual costs, in the pursuance of this campaign.

In order that the plan might be on a uniform basis, the Range Bureau of the Gas Appliance Society worked out a table of discounts which were to be deducted from the selling price of the range or water heater to establish the gross profit. They also mapped out the territories to be assigned to each dealer and took charge of their allotment.

The data and prospects obtained from the field were tabulated on the company's regular prospect blanks, pads of which were supplied to each salesman, and a regular filing system was set up for handling this information.

To prepare the homemaker for the salesman's call, letters of an explanatory nature were sent out each week in advance of the actual solicitation. These were found exceedingly helpful in breaking the ice.

WHAT THE CAMPAIGN SHOWED

The facts and figures obtained during the five months the campaign was in operation are of interest, we believe, to every reader. An outlined report is given in the tabulation which appears on this same page.

Interesting and somewhat startling facts of this cross-section of conditions show that out of 8,726 personal interviews, 811 prospects resulted—or 9.25 per cent; that 684 coal ranges were found in actual use; 520 waterbacks were still supplying hot water for the customary Saturday-night bath; and in 341 instances no water heating devices were found at all.

The number of electric ranges is not alarming, but 908 hot plates would indicate some future business for the gas range salesman.

The actual sales made during this campaign were not large, as no special inducements were offered to the purchasers, and appliances were sold at standard prices. It was found on a final analysis that the larger department and furniture stores not in the plan, actually sold nearly as many of the prospects developed as did those dealers who worked the territory. This was caused by the inborn tendency of the buying public to shop, and by the price appeal offered by these merchants.

The campaign proved a stimulus for increased newspaper advertising on the part of those dealers not cooperating. It carried into over eight thousand homes a forcible and emphatic message of better and more modern gas equipment, and the cross-section of conditions as they exist in the field gives the merchant as well as the gas company much food for thought.

RESULTS OF HOUSE-TO-HOUSE RANGE AND WATER HEATER CAMPAIGN

Operated June 15-October 31, 1926, inclusive

Total calls made	13,799
Out, or did not answer	5073
Interviewed	8726

Prospects developed 811, of which 568 were gas range prospects, 243 were automatic water heater prospects.

RANGES

Condition Found	Comb. Ranges	Gas Ranges	Gas Plates	Elec. Ranges	Coal Ranges	None at all
New	47	374	7	3	10	45
Good	925	2757	777	93	637	....
Bad	87	433	124	....	37	....
Totals	1059	3564	908	96	684	45

WATER HEATERS

	Instn.	Storage	Comb.	Wtrbks.	Elec.	None at all
New	36	55	106	3	.....	341
Good	516	701	3048	494	34	....
Bad	14	24	67	23	.....	....
Totals	566	780	3221	520	34	341

PACIFIC COAST GAS ASSOCIATION

A Department Conducted by Clifford Johnstone, Executive Secretary

San Francisco Gathering Most Successful to Date

THE Central Regional Conference held in San Francisco at the Fairmont Hotel on November 18 appears to have been an unqualified success. The absence of a set program of papers and reports was to a large degree responsible for this success, as it afforded time for an intimate discussion of a large number of topics most of which were of live interest to everyone present. The attendance reached at least two hundred, by far the greatest of any similar meeting in the Bay region.

Thursday evening about a dozen of the delegates left for Marysville where the new water gas plant of the Pacific Gas & Electric Company was inspected.

A highly successful noon luncheon replaced the usual evening banquet, and drew a large attendance. President W. S. Yard turned the luncheon program over to R. E. Fisher who introduced a number of speakers, among them the four section chairmen, C. M. Grow, R. M. McCalley, D. L. Scott, and E. N. Simmons, who outlined the plans for their sectional activity in the year ahead. H. M. Crawford gave an able description of the A. G. A. Laboratory, which is published in this issue of *Western Gas*. W. E. Creed struck an encouraging note in his speech, when he said that we are laboring in a "dynamic" industry, and again a "fighting" industry. We cannot remain indoors and expect to progress, for competition is too keen; but competition holds all the elements for development. We must spend the money to keep abreast of the best in our science. The infusion of young men of training and ability is essential today, for the industry of 20 years hence, for we have written only a few pages in the book of gas progress. These were some of the high points in Mr. Creed's stimulating message.

The discussions in the four section meetings threw much light on the prospective committee assignments, and as a result the section programs have been crystallized and committee appointments are now being made by the section chairmen. This task has been greatly simplified by the fact that nearly twenty per cent of the Association's membership has volunteered for committee work and many valuable suggestions have been received. With both splendid leadership and support already assured to the Association's committee program, the year's work is certain to eclipse in value anything we have heretofore done. Elsewhere in this department the section chairmen have written of their plans.

Technical Section Reports Good Committee Outlook

By R. M. McCALLEY, *Chairman*

THE meeting of the Technical Section, held in the Florentine Room of the Fairmont Hotel, was attended by approximately 125 delegates. The greater number of those present came from the San Francisco Bay District, although the Los Angeles, San Diego, and Portland companies were represented.

R. M. McCalley

A number of the subjects included in the program of activity for the ensuing year were discussed.

Considerable interest was indicated in the benefits to be gained through the dehydration of gas in order to eliminate moisture and mitigate the effects of internal corrosion.

A progress report was submitted by K. N. Cundall on the recent developments in liquid purification.

The operation of the latest type of water gas sets was described in detail by F. W. Steere who gave a very interesting and complete description of the new Marysville plant of the Pacific Gas & Electric Company.

An extended discussion of recent developments in main and service installation methods followed. Considerable doubt as to the need and value of "swing" joints in services was expressed, the prevailing opinion being that aside from securing proper drainage the utility of such joints was limited.

The methods of brazing service connections on live gas mains, including the replacement of defective clamps and saddles were described by A. F. Bridge.

This meeting had a very significant effect upon the program of proposed activity. The outline of the tentative program which was circularized with the call for committee volunteers was thoroughly discussed and modified to meet the needs and interests of the member companies. As a result of the plan the work which will be undertaken will not only be on subjects which are of considerable value but the committee men will be those most actively interested in the work being done. This plan, which was conceived by the Executive Secretary, appears to have been the inspiration for renewed interest, and bids well to make this year's work one of the most productive which the Association has enjoyed.

APPLIANCE INFORMATION COMMITTEE ACTIVE

The Association's Appliance Information Committee, under the leadership of E. L. Hall, is now actively engaged in studying the tentative approval requirements of the American Gas Association for water heaters and central house-heating appliances. C. R. Miller in the North, H. M. Crawford in the central district and F. M. Banks in Southern California have called meetings of all interested parties to discuss and criticise the requirements as sent out by the General Requirements Committe of the American Gas Association. The A. G. A. has asked that all criticisms of the water heater requirements be in their hands by December 15 and criticisms of the central househeating requirements reach them by January 15. A sufficient number of copies of these requirements have reached the Coast to permit everyone to make a study of them, and it is hoped that the committee will be able to render valuable assistance to the national association's laboratory program.

SANTA CRUZ TO BE SITE OF 1927 CONVENTION

At a meeting of the Directors held in connection with the San Francisco conference, the decision was reached to hold the 1927 Annual Convention at Santa Cruz with headquarters at Hotel Casa del Rey. The time was not definitely decided but it will probably be about the middle of September. The Casa del Rey offers comfortable living quarters, cool sea breezes, and exceptionally spacious meeting rooms.

Name Chairmen, Papers for Commercial Section

By C. M. GROW, *Chairman*

THE meeting of the Commercial Section of the Pacific Coast Gas Association was called to order by President W. S. Yard at 2:30 P.M., November 18, 1926.

Our president in a brief but earnest speech expressed his high regard for the work of the men in the Commercial Section and acknowledged its great importance to the gas industry.

C. M. Grow

L. F. Galbraith was called to the chair and presided as chairman of the meeting. Short papers were presented on four branches of the industrial application of gas and three papers on domestic uses including Home Service.

A semi-technical paper was presented by Herbert Haas of the Pacific Gas and Electric Company, which described an outstanding change from oil fuel to gas in a ceramic plant by the skillful redesigning of the furnace. This paper is a matter of record and will be of inestimable benefit to all industrial sales engineers.

There were at least a dozen speakers who did not hesitate to call a spade a spade and many of the members entered into the discussions.

Many concrete instances were given not only of successful installations but of those jobs which were put on the lines and later have been changed back to oil fuel.

To me this meeting was unusually beneficial to the gas industry for the reason that it brought out in bold relief the slippage in connected load by reason of aggressive oil competition.

Salesmanship will initially secure a piece of business but to enjoy this load over a period of time requires the best of personal service, close personal contact with the consumer and unequivocal support on the part of company managment.

Inroads by oil competition get the opening wedge through the poorer installations but once in the better installations are in jeopardy.

The laboratory at Cleveland came in for proper recognition and was hailed as the greatest single sales support that the gas industry has ever had. H. M. Crawford led a discussion of the laboratory coupled with the A. G. A. Blue Star Sales Plan and the combination was welcomed as the straightest and surest road to uniform practices in installation and the complete and adequate equipment of modern homes with approved appliances.

For sincere and genuine interest and desire to put the shoulder to the wheel, the men at this meeting rated high.

The work of the Commercial Section for the year 1927 is indicated by the following program:

	Chairmen
Industrial Sales and Data Sheets	Lee Holtz
Home Service	J. C. Gilbert
Advertising	H. E. Davidson
Domestic Sales	W. H. Mixter
Dealers	Frank Packer
Architects and Builders Cooperation	F. U. Naylor
Electric Competition	J. Earl Jones
Heat Conservation	H. L. Warren

These committees will be heard from at each of the sectional meetings and at the convention in Santa Cruz in September.

Problems of the most vital interest to the industry are being delved into and the results of this research will be presented in abridged form for the benefit of the gas industry as a whole.

At the convention papers will be presented on special subjects by prominent men in the industry, as follows:

BLUE STAR PROGRESS—H. M. Crawford, Sales Manager, Pacific Gas & Electric Company.

NEW BUSINESS AND RATE STRUCTURE—F. M. Banks, Sales Supervisor, Southern California Gas Co.

SALES ACTIVITY IN SMALL COMPANIES—H. R. Basford, President, H. R. Basford Company.

REFRIGERATION—H. C. Parker, Vice-President and General Manager, Parker Ice Machine Company.

OUR GREAT INDUSTRY—John Hartog, Sales Manager, Portland Gas & Coke Company.

RESTAURANTS, CAFES AND CLUBS—W. R. Adams, Industrial Engineer, Pacific Gas & Electric Company.

Perhaps at no time in the history of the gas industry has there been such a wide range of opportunities open to the gas sales engineer as at the present moment. The Commercial Section is alive to these opportunities and is well organized to "cast a fly" at the first shadow of a prospect.

A CONVENTION FIRST-AID CONTEST IS PROPOSED

The Board endorsed a suggestion made by Frank Wills to the Secretary that a first-aid team contest be made a part of the Convention program in connection with the work of the Safety Committee of the Technical Section. This recommendation will be made to the Committee upon its appointment. Our Past President, F. J. Schafer, was so enthusiastic over the idea that he has offered a cup to go to the winning team.

Public Relations Section Makes Set-up for Year

By D. L. SCOTT, *Chairman*

SUCH members of the Public Relations Section as could be assembled, in the face of several other activities provoked by the imminence of the Big Game, held a meeting in the Fairmont Hotel Thursday morning. Everything considered, the attendance was very gratifying.

D. L. Scott

The Section devoted itself to the task of squaring away for a fresh start at the year's work. In order to prevent the multiplication of committees in step with the multiplication of subjects claiming the attention of the Section, it was decided that all public relations questions could be classified under one or the other of the headings (a), (b) and (c) in the set-up given below. With the reduction of the number of committee chairmen, perhaps it is not vain to hope that the chairmen will be permitted to attend the Regional Conferences in the interest of effective Section planning.

COMMITTEE SET-UP; SUBJECTS FOR 1926-27 CONSIDERATION

1. Committee on Employee Relations, Education and Training.
   a. Employees' Education
   b. Company and Employee Relations.
2. Committee on Utility Policies and Practices in Dealing with the Public.
   a. Transactions with Customers
   b. Customer Ownership.
3. Committee on External Factors in Public Relations
   a. Advertising and Publicity
   b. University Education.
   c. Legislation
   d. Public Relations in Small Companies
   e. Civic Activities and Spirit
4. Women's Committee
   a. Home Service Departments
   b. Training and Activities of Women Employees
   c. External Women's Organizations.
5. Special committee on a California Public Utility Information Bureau.

Some of the subjects listed may remain dormant temporarily, to be revived if and as their consideration is demanded by changing conditions or by the inquiries or interest of members.

The Women's Committee comes in response to the recommendations of last year's administration. We look for great benefit from this Committee.

The Special Committee on a California Public Utility Information Bureau is a hold-over from last year. Just what

will be the fate of this proposition will be for the executives in the gas and other utilities to decide.

A little later the Section will break out with a proposal of dramatic interest. But when we do, we shall expect an article in *Western Gas* all to ourselves. Meantime, cultivate a sympathetic and eager spirit, and "lie low and say nothing."

Accounting Section Work Definitely Organized

By E. N. SIMMONS, *Chairman*

AT the meeting of the Accounting Section held in San Francisco on November 18th, a definite program was mapped out as a guide to committee activities during the year. The spirit of the meeting was to produce a program which would be of greatest interest to the majority of the members. After considerable discussion an outline was adopted which embraced a limited number of well defined subjects of major interest.

E. N. Simmons

One of the outstanding features of this plan is to provide sufficient time for discussion of the subjects presented in order that the entire Section may get the benefit of the committee work.

Customers Accounting:

This committee has already started work on a comparative study of the various bookkeeping systems in use on the Coast, and plans to make a thorough investigation in order to obtain necessary data as to unit costs, etc., to be able to report back to the Convention as to the best system and the comparative unit costs of operation under each of the principal systems in use.

The committee is composed of those representatives who are the most ardent supporters of their particular system, and plans to arrive at definite conclusions in order that the subject of customers accounting may be laid aside until further important developments are made.

Pay Roll Procedure:

A study is to be made resulting in positive recommendations as to the best plan for making pay roll distribution; where and how often such distribution should be made and a treatise on pay roll procedure as it applies to public utilities. The matter of compiling pay roll information for use in connection with Federal income tax returns will also be covered.

Undistributed Costs:

A definite treatise on the procedure to be followed in handling undistributed costs is to be prepared for the guidance of company members. Very little information on this subject has been published and a definite outline for the guidance of the accountants in the handling of undistributed costs should be of interest to all companies in the preparation of their monthly and annual reports, as well as in the making of schedules for rate fixing purposes.

Credits and Collections:

This committee will prepare cost data in connection with various methods of making collections; the final report to include a tabulation showing unit costs and percentage of loss experienced under each system.

The matter of discounting bills will also be studied. While considerable work has been done in the past in connection with various phases of the subject, very little has been done recently in connection with this particular branch of the work.

Costs of Selling Stock:

The Statistical Committee will undertake a study of the comparative costs of stock selling and also accounting in connection with this work. Quotations of stock selling costs are quite often misleading on account of the fact that there is no uniformity as to just what should be considered as "selling costs." One company will include its entire charge to Organization on account of the sale of stock, while another will include only such direct costs as sales labor, commissions and advertising.

Materials and Supplies:

This committee will prepare a paper on the treatment of materials and supplies giving particular attention to the matter of the determination of obsolescence and excess quantities.

Use of Tabulating Machines and Other Mechanical Equipment:

While considerable has been written on this subject in the past, the advancement has been so rapid, both in the development of the machines themselves and in their application, that it seems quite fitting that the subject be considered from the present day standpoint. The Accounting Section is quite fortunate in securing a man to handle this subject whose experience and study along these lines qualify him as an expert. The subject is of such general nature and of such great importance to all branches of the industry that it has been decided to make this paper the Accounting Section's contribution to the program of the General Session of the next Convention.

In the selection of committeemen to serve during the coming year special attention has been given to the qualifications of each man in order that papers might be developed which would be of the greatest interest to the industry.

Support Is Asked for Load Factor Committee

By R. M. MCCALLEY

Chairman, Technical Section

One of the most important undertakings of the Pacific Coast Gas Association's Technical Section for the ensuing year is the study of load and demand situations by the Load Factor Committee.

This committee, under the chairmanship of W. M. Henderson, will continue on a more extended scale than last year, the study of individual appliance and consumer characteristics. These characteristics will be analyzed in such a way as to disclose information on the effect of individual or group demands.

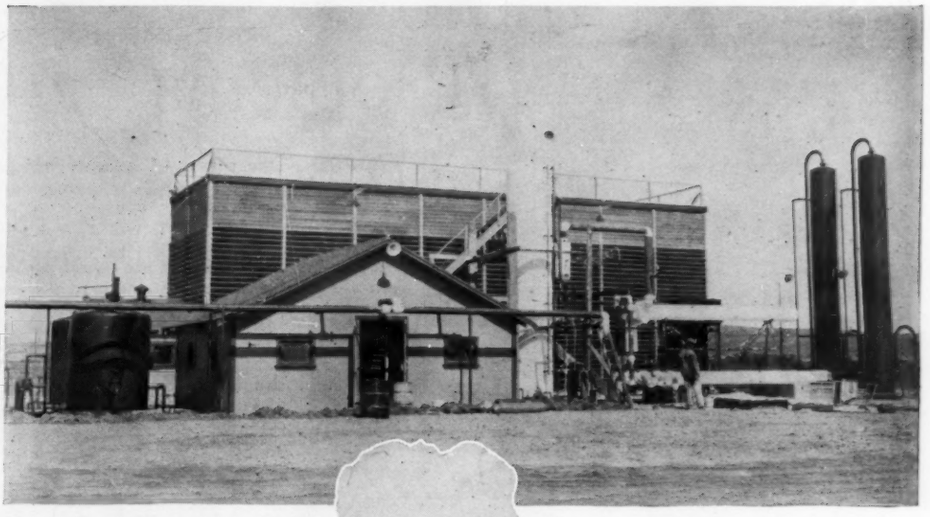
The utility of these data is far reaching. The maximum hourly demand upon the distribution system as well as the twenty-four hour production demand can be more accurately predicted when this information is available. Moreover the cost to serve peak as well as off-peak and summer business, can be determined on the basis of actual operating conditions.

The Technical Section urges all of the member companies to support Mr. Henderson in this work, and particularly to make such tests and to secure such data as may be required.

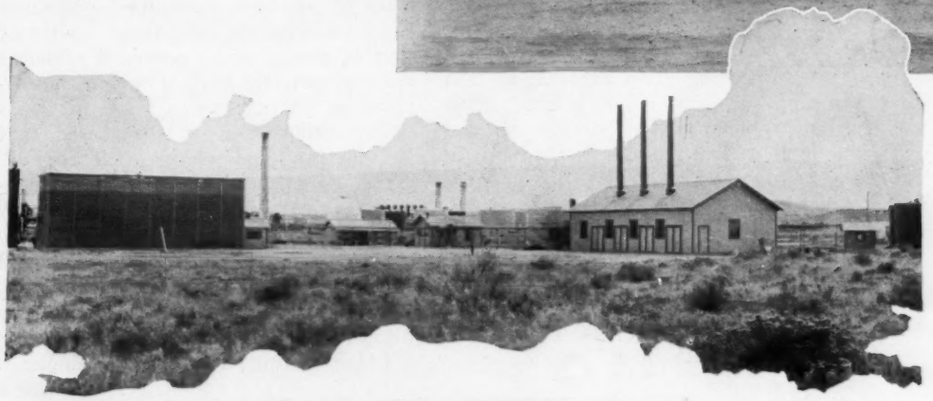
GAS RESEARCH FELLOWSHIP

The Board followed the wishes of the Pasadena Convention by appropriating $1,000 to establish a Gas Research Fellowship at the University of California. Any senior student at a university or college in the territory of the Association can be a candidate for the fellowship, the selection to be made by a committee of University and Association officials. The same committee will determine his studies and select a problem for his thesis leading to a Master's degree. The $1,000 will be devoted to the payment of the successful candidate's expenses during this year of graduate work.

The Directors also instructed the Secretary to print a second edition of the Gas Appliance Installation and Service Manual. This book, the work of a committee headed by C. R. Miller of Portland, has had an international sale and its popularity and value are attested to by the many re-orders received. It is desired to improve its contents where necessary and anyone having suggestions or criticisms should forward them to the Secretary at once.



At the right is a general view of the Standard Engineering Company's absorption plant at Evansville, near Casper, Wyoming. Left to right, the units are: Fat and lean oil tanks; pump house, controlling circulation of lean oil to absorbers and fat oil through the still, and also circulation of water over cooling tower; new type 48-inch Newton blending still; heat exchangers and dephlegmators, 12 inches in diameter by 20 feet in length; two 36-inch by 24-foot Newton absorbers. The cooling tower in the background is 64 feet long by 24 feet high.



The general view below, taken from the opposite side, shows the boiler house on the right, in which are housed three 50 h. p. return tubular boilers which operate at 150 pounds steam pressure. One boiler is used as a standby, two being on the line continuously.

Evansville Absorption Plant Treats Teapot Dome Gas

By L. Y. MATTES
Standard Engineering Company

DURING the past year the absorption plant operating on gas from high pressure transmission lines has acquired an important place in the natural gasoline field. A number of companies in Southern California are treating gas under contract with gas distribution companies, the gas having been previously passed through a gasoline plant before delivery to the distribution company.

Since April of this year the Standard Gasoline Company, with headquarters at Los Angeles, has been actively interested in this high-pressure type of operation. Its two plants at Newhall, Calif., treating gas from the Midway Gas Company's system, have aroused considerable interest in the industry. More recently a similar type plant has been erected at Ennis, near Riverside, Calif. All three of these plants are working on so-called "dry" gas. The combined capacity of the Newhall plants is 15,000 gallons a day, and the new Riverside plant has a potential production of half that amount.

Three months ago the company completed its absorption plant at Evansville, Wyoming, located about 200 feet from the Platte River, four miles northeast of Casper. This plant was built to handle gas on the lines of the New York Oil Company, the gas being from the Teapot Dome fields, made famous in government lease litigation. The gas has already been treated in the compression plant of the New York Oil Company, before going into their transmission lines for ultimate delivery to Casper, where it supplies the community's domestic and industrial needs.

CHARACTERISTICS OF GAS

There is an available supply of gas from the Teapot Dome fields of about 15,000,000 cubic feet a day, of which some 4,500,000 is available to the new Standard Engineering plant. The gas comes in at a pressure of 60 pounds and leaves the plant at 56 pounds, showing a pressure drop of only four pounds. It tests .63 gallons of gasoline to the thousand cubic feet. Gravity runs 73 to 75 Be.; the end point is 390 degrees F.; and vapor pressure is 13 pounds per square inch.

Gasoline recovery in the Evansville plant ranges from 85 to 95 per cent. The gasoline shows exceptionally good color—30 plus.

New methods adopted in plant operation make possible a relatively large recovery in proportion to amount of gas treated, the plant's daily yield now being 4,300 gallons. The gasoline is shipped out by a two-inch pipe line to the refinery of the White Eagle Refining Company, which is only one and a half miles distant. The refinery takes the whole output. Absorption oil and blending stock come to the gasoline plant through a parallel line from the same refinery.

COLD WEATHER PRACTICE

Cold weather conditions in this section make necessary operating practices unknown in warmer climates. A heavy north wind brings temperatures as low as 35 or 40 degrees below zero, which means, of course, that all pipe lines must be laid below the frost depth, and all apparatus must be heavily insulated. Moisture drains are placed at all low places in the lines. It is impossible to run water over the cooling towers all 12 months in the year, so the system is arranged to run a minimum of water, or no water at all, over the towers. Gasoline-water separators, along with all steam traps and gasoline traps are housed

(Continued on Page 48)

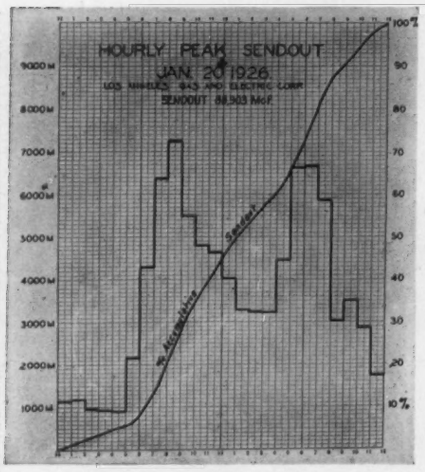


Figure 2

Problems *of* Gas Service

DURING the course of lectures which made up the gas appliance school conducted by the Gas Appliance Association of Southern California the following summary of the operation of a gas utility was presented by Mr. Masser. While particular reference is had to the Los Angeles companies, much of the discussion would pertain to any gas utility. It is published in the belief that many will be glad to obtain a view of their industry which is broader than the particular department in which their immediate interests lie.

By H. L. MASSER
Gas Engineer, Los Angeles Gas & Electric Corporation

THE service of gas, like that of electricity and water, has long been not only a public convenience, but a public necessity, and the corporation undertaking such duties immediately becomes a public servant. The duties of a gas company are intricate and far-reaching, and cover a great variety of details regarding which the public is never aware.

In considering the rendering of gas service, it may be simplest to briefly analyze the company's operations according to the following departments: (a) Production, (b) Distribution, (c) Commercial, (d) General.

The gas production department comprises the gas works, including not only the gas generating equipment, but also machinery for pumping this gas throughout the system, as well as holder stations for the temporary storage of gas, in order to take care of intermittent and heavy loads, according to consumers' requirements. In Los Angeles, we are fortunate enough to enjoy a very high quality of gas at a reasonable rate. This results primarily because of our present supply of natural gas. In most cities, gas of about 550 B.t.u. quality is served, whereas in Los Angeles, the quality is 850 B.t.u. and the rate per thousand cubic feet is only about one-half that elsewhere. Our gas is what is termed "mixed" gas, being composed of approximately 50 per cent natural gas and 50 per cent manufactured gas, carefully blended in such proportions as to maintain throughout the year a uniform quality, with a monthly average varying but very slightly from the prescribed standard. The daily fluctuation of quality is never permitted to exceed 25 B.t.u.'s per cubic foot. Such uniformity is one of the greatest factors for insuring satisfactory service and satisfied consumers.

The procuring of an adequate natural gas supply presents a very difficult operating problem. Most of the natural gas used in Los Angeles is produced in the surrounding oil fields. The balance is delivered from Kern County, a distance of 125 miles, and from Ventura, a distance of 85 miles. These northern fields are connected with the city by pipe lines operating with an intake pressure of approximately 400 pounds per square inch. About 62 million cubic feet of gas per day is delivered from these two sources, while about 140 million cubic feet was being received from local fields early this year because of heavy production at Signal Hill, Dominguez, Rosecrans and Inglewood. This volume of gas, however, declined very rapidly, and by the end of the year will probably be reduced to less than 85 million cubic feet, which with the supply from Ventura and Midway, will make a total supply to the district of about 145 million cubic feet the first of 1927.

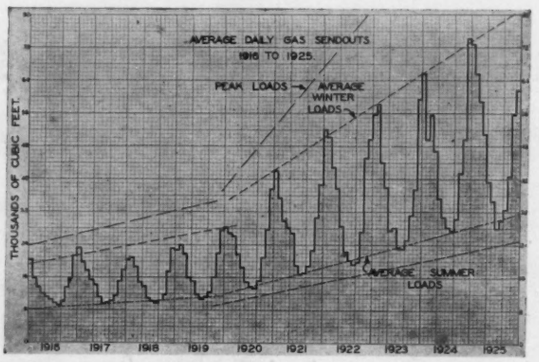


Figure 1

In the territory surrounding Los Angeles city there is an intricate network of high pressure transmission lines for procuring natural gas in the various oil fields, and lines for the distribution of gas to the various communities in this district. The construction of a transmission line from a natural gas field is an undertaking of considerable hazard, inasmuch as there is no dependable means for predetermining the probable operative life of such a line in order to determine whether or not the investment in it would permit earning a fair return and amortize the capital during the period of gas supply. As an example of this situation, large investments were made in pipe lines to Santa Fe Springs, but because of the very rapid decline of that field, the initial cost was probably never completely written off. This situation is particularly serious in fields where casing head gas is produced, that is, gas produced along with the oil, rather than from "dry" gas wells, independently of oil. In the first class of wells, the gas must be taken at its natural rate of flow along with the oil if it is to be conserved. Because of heavy drilling programs, this usually means, in new fields, a tremendous gas wastage during the early development period when well production is heavy. However after a few months there follows a very rapid decline in the gas supply. In "dry" gas fields, the gas may be taken from a well at the actual rate required to supply the load, and if it is not necessary to use gas, the valve at the top of the casing may be closed and the gas conserved for a more or less indefinite period. In the Los Angeles Basin, there are no important "dry" gas producing areas. At present, the only "dry" gas available is obtained from the Midway and Elk Hills fields in Kern County. "Dry" gas is usually of lower B.t.u. quality than casing head gas, inasmuch as the latter contains small amounts of gasoline vapor and other constituents of high fuel value.

REFORMING NATURAL GAS

The production of the "manufactured" constituent of our gas mixture is made from oil during the winter season, while during the summer, this portion of the gas is produced from natural gas itself by treating the latter in the gas

generators in the same manner as is used for the manufacture of oil gas. The use of natural gas in this process, which is locally termed "reforming," results in enormous savings, which permit the low rate enjoyed here. The question is often raised: "Why should natural gas be reformed, instead of delivered direct to the consumer?" The answer is: "It is necessary to supply, throughout the entire year, summer and winter, a gas of uniform quality." During the winter, there is not sufficient natural gas available to provide more than that required for mixing, so the manufactured portion of the commercial gas must be made from oil; a like quality of mixed gas must be served during the summer, and this can be produced most cheaply by present methods.

Two companies supply the Los Angeles city district with mixed gas, Southern California Gas Company and Los Angeles Gas and Electric Corporation. The present peak load requirement for both companies, with very cold weather conditions, would amount to about 170 million cubic feet. The combined gas production facilities total 115 million cubic feet daily capacity of gas generators, which, with the supply of natural gas, assure adequate service. In order that this gas may be delivered to the consumer, the companies have installed gas pumping equipment having a total hourly capacity of 17½ million cubic feet. Much of this gas is put into storage holders during the night and off-peak hours, in order that it may be available in sufficient quantities as required. Holder capacity in this district amounts to 82 million cubic feet.

The distribution of gas in the Los Angeles metropolitan area is an undertaking of considerable magnitude. There are, in this locality, about 360,000 individual consumers served with mixed gas. In order to render this service, the companies have installed approximately 4,000 miles of gas mains of sizes varying from 2″ to 30″ in diameter. Throughout this entire network of mains, it is necessary to maintain gas pressures which permit the delivery of gas to the consumer at very uniform pressures. Some of these mains operate at high pressures, varying from 4 to 60 pounds, which serve consumers through independent house type regulators, while other mains are fed from trunk lines and carry gas at pressures of 6″ to 9″ water column. Gas is fed into these trunk lines by the pumping equipment at the gas works, or from the various outlying holder stations situated at strategic points on the distribution system.

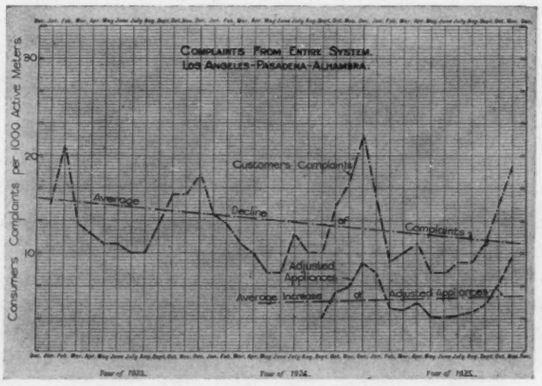


Figure 3

AVERAGE DAILY SENDOUTS

Figure No. 1 presents graphically a comparison of average daily gas sendouts for the Los Angeles Gas and Electric Corporation by months since 1916. It is very noticeable that during the period from 1916 to 1920, there was a very gradual and uniform growth of gas requirements, and the fluctuation from summer and winter, while large, was not as extreme as now occurs. During the period from 1920 to date, there has been a most rapid increase in demand for gas by domestic consumers. Since 1920, the number of consumers has nearly doubled, with much more than a corresponding increase of gas usage. Inasmuch as gas is the universal fuel in this district, even for house heating purposes, the winter loads have grown at a far more rapid rate than have the summer loads, as is indicated by the increasing divergence of the lines representing the average winter requirements and the average summer requirements. It is to be noticed that for the winter of 1924-1925, the average daily requirement was about 74 million cubic feet, whereas the summer load dropped to an average of 28 million cubic feet per day, a difference of 46 million cubic feet. For the same period, the peak winter day amounted to 105 million cubic feet, which meant that the Los Angeles Gas and Electric Corporation had to have a plant and facilities capable of providing for the peak day 77 million cubic feet of gas in excess of the mid-summer average load. Such wide fluctuations of gas requirements make the rendering of adequate service extremely difficult and expensive. The fluctuation noted above more than exceeds twice the peak day requirement of the city of San Francisco. It is estimated that the Los Angeles Company has been obliged to invest over 13 million dollars for rendering service on days of extreme peak load. This figure represents only investment in gas production equipment and mains for supplying the demand of peak loads which are in excess of the normal heavy winter loads. As time goes on, with an increased number of consumers, the variation between summer and winter demands increases and a greater amount of capital remains idle during all but the winter season. No other large city in this country, to the writer's knowledge, presents as difficult an operating situation from the standpoint of load factor as does the Los Angeles district.

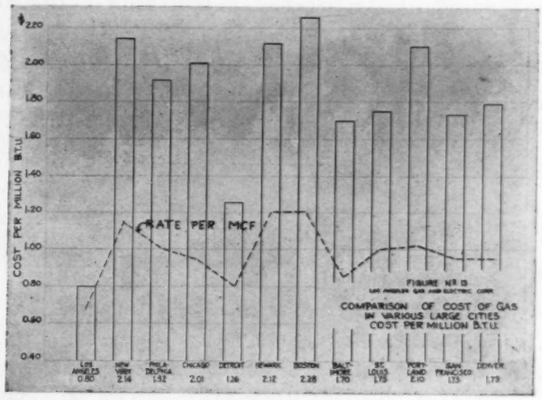


Figure 4

There is an extreme fluctuation of gas load over a period of but few days. Obviously, it is necessary to have the manufacturing plant in readiness to greatly increase its capacity on days of heavy load when the natural gas supply is inadequate. Inasmuch as natural gas is received in substantially uniform quantities, the variations must be absorbed by the manufacturing plants.

Figure No. 2 shows the hourly variations in gas sendout. The typical load in this district is very heavy from 8:00 to 9:00 in the morning, and again from 5:00 to 6:00 in the evening, while after 9:00 p. m., the load declines very rapidly. It is during those hours that the producing plants are manufacturing gas at heavy rates, in order to replenish the supply in the holders to provide for the following day's load.

DISTRIBUTION DEPARTMENT

The mechanical work for taking care of gas service complaints falls upon the gas distribution department. In Los Angeles, the number of gas service complaints is generally less than in communities supplied with manufactured gas. This is attributable in a large part to the fact that we have natural gas

(Continued on Page 40)

EDITORIAL

Time for Action on Refrigeration

A NEWS item in this issue announces that one national manufacturer of gas-fired refrigerators has put his unit on the Pacific Coast, and gas companies of the West can enter their orders for almost immediate delivery.

This is good news. The time for enforced inaction on the refrigeration load is past. Now new business departments may go to work to lay sales plans for the active merchandising of a new commodity. Electric refrigeration has reached but a small proportion of refrigerator prospects. Gas is emphatically in the running, and the race will be measured in sales.

Lucius Seymour Bigelow

ON THE last day of October Lucius Seymour Bigelow, president and editor of the Gas Industry Magazine, passed away at Buffalo, N. Y. Mr. Bigelow, with years of pioneering and service in the cause of gas behind him, left friends in the industry from coast to coast who mourn his loss. He was instrumental in forming the National Commercial Gas Association, which ably represented the gas appliance manufacturing industry from 1905 until the organization was merged with the American Gas Institute to form the American Gas Association.

As a fitting tribute to the man, we can do no better than to repeat a phase from headquarters of the American Gas Association, of which Mr. Bigelow was an honorary member: "A strong personality, a man of high ideals, of kindliness of nature, of unbounded enthusiasm for his work in the field he had chosen."

A New Phase of Association Membership

SOME months ago there was formed within the ranks of one member company of the Pacific Coast Gas Association an organization which seems due to become a decided asset in the furthering of association enterprises. We refer to the P. C. G. A. Service Group of the Los Angeles Gas & Electric Corporation. This group is simply those of the company who have membership in the Association, banded together in definite form as a working unit.

It may be that this service group will prove a forerunner to others with similar purpose, which may be formed in other utilities to cooperate with the association administration in committee work and in other channels. The idea is flexible enough to permit of its adoption in both large and small utilities.

There are certain obvious purposes which might be served by organizing informal association clubs throughout the territory of the association. It would increase interest in association projects and would built membership. True, the association membership is already large, but some increase is possible. While only the favored few may attend conventions regularly, and not everyone can work on committees each year, the association club could provide the personal contact which would assure sustained interest. Again, there are social aspects to such clubs that alone might justify their organization in some cases.

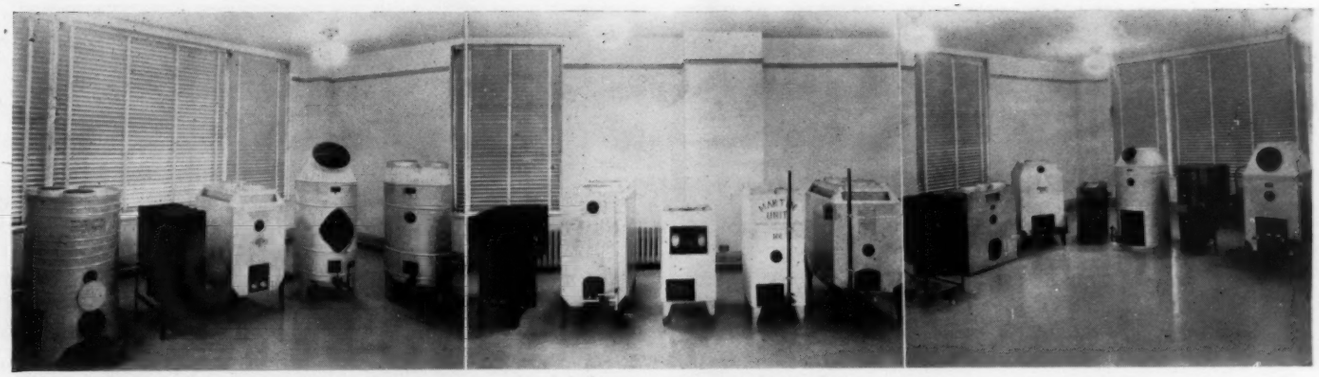
Western Gas, for one, would like to hear the matter discussed generally among the association membership.

A Loss to the Gas Industry

TERMINATING a thirteen-year period of constructive work on the staff of the California Railroad Commission, Lester S. Ready, chief engineer of that body, will on December 15 leave his present employ to become president of the Key System Transit Company of the San Francisco Bay district.

Mr. Ready's resignation means a loss to the gas industry, the nature of which only those who have followed the course of his services will know. Perhaps no one in California has done more to bring about a closer understanding between the California Railroad Commission and the utilities of the state, and between the executives of the several gas companies themselves. As chairman of the Commission's joint committee on efficiency and economy of gas he rendered outstanding service, contributing effectively to the able report which that committee rendered after some three years of investigation.

It is not too much to say that Mr. Ready's labors are partly evidenced in the prestige which attaches to the California Railroad Commission, the decisions of which body are regarded as sound and constructive throughout the United States. The gas industry regrets the loss of a man of Mr. Ready's ability and character.



Battery of gas furnaces making up display of Gas Furnace Association of Southern California

A Display Department *to* Aid Gas Users *and* Builders

(Continued from Page 19)

for a first-class range, and it is the exception to find a home where real thought has been shown for proper placing of appliances. The company will gather a collection of model kitchen plans, from the A. G. A., from range manufacturers, from qualified architects and other sources, and will place them at the disposal of those interested in new construction. Every home builder will be contacted as soon as the building permit is issued, and will be invited to use the plan service and the appliance display as an aid to intelligent design and installation of adequate appliances.

A complete line of temperature regulators will be on exhibit, and the home builder will be shown how temperature may be maintained with heat from gas furnaces, steam boilers, etc.

The company's policy will be to advise as to the right kind of gas heating equipment for a given purpose, and to advise as to the correct size of equipment, in order that water heaters, space heaters, etc., may do their work to the users' satisfaction. Prices will be given on request, and since the company does not sell appliances, the attitude will of course be strictly impartial as to different makes. A complete directory of locally made and locally sold appliances will be maintained, including the appliances not on display, and also covering industrial equipment.

Some industrial equipment, including a line of gas burners, will be shown, but space limitations will not allow of exhibiting more bulky industrial apparatus.

As a further service to gas users there will be a model kitchen outfitted in one section of the display.

The company believes that this display department will be a big cog in its wheel of service to the public, both the consumer public and the prospective builder. It will provide a place where buyers may come to see a broad choice of quality equipment, and to secure unprejudiced advice on their gas equipment problems from those qualified to give it. It will constitute an agency for raising the standards of gas appliances sold, and the benefit should extend to manufacturers, dealers, and the gas company, as well as to the primary class the department is designed to reach—the gas consumers.

GAS FURNACES SHOWN

As a separate and yet integral part of this display, the manufacturers of gas furnaces who are members of the Gas Furnace Association of Southern California have arranged an exhibit of their various furnace units, the warm air heating equipment display constituting perhaps the only thing of its kind in existence—at least on the scale achieved here. Eleven separate furnaces are on the floor, a number of them showing the heating element set out of its shell, as well as the complete unit. Arrangements have been made to "hook up" the furnaces, for demonstration to architects, contractors and builders, who are expected to attend the display in considerable numbers as soon as it is generally known that the Association is offering this service.

The Association will employ an expert furnace man who will be on hand to show the various units, and to advise with those who wish information on the best methods of laying out the heating requirements of a house. The motive behind the furnace display is similar to that of the appliance display of which it is a part—in this case, to create a general knowledge of proper standards of warm air heating.

To give further information on what is good practice in gas furnace heating the Association is installing a false wall, duplicating the average unplastered residence wall, to show proper methods of installation for riser pipe, boots and boxes.

There will also be an extensive collection of terra cotta vent pipe, which is used by all Association members in the belief that it is the best obtainable gas flue. Heat pipe and fittings will be exhibited. One department of the furnace display will be devoted to some anonymous "abortions" which have brought discredit to gas furnace heat in the past.

FURNACE HEAT POPULAR

This display has a logical location in Southern California, where gas furnace heat has won its greatest popularity, and where is centered much of the manufacturing activity in this field. It is safe to say that in the great majority of homes in which furnaces have been selected as the heating units, gas furnaces have been chosen. Coal, wood, and other competitive fuels are given scant consideration for house-heating in this territory. According to the Gas Furnace Association, this is attributable not only to the low cost of gas, but to the development by local manufacturers of the unit system of furnace heating. This type of system, which involves the installation of several small furnace units to a single home, making possible the localizing of heat at the will of the user, is not to be thought of with furnaces using fuels which demand manual attention in operation. The unit system, says the Association, with its short pipe runs has eliminated high stack losses encountered in use of the central system, and has also brought economy in gas consumption through use of small units which can be operated singly as heat is needed at various parts of a residence.

The gas appliance department described above should leave its imprint upon building practice, as concerns heating equipment, and should be a force for much good to gas consumers and to the company in its function of giving information on how to burn gas efficiently. There are a number of aspects of the new department's work which as yet are in the air; but enough progress has been made to demonstrate that a real need is being met.

P. G. & E. HEAD GIVES FIGURES ON YEAR'S GROWTH

W. E. Creed, president of the Pacific Gas & Electric Company, during his address to those who attended the noon luncheon of the Pacific Coast Gas Association at the Hotel Fairmont, San Francisco, November 18, gave some interesting figures on the current growth of the P. G. & E. By the end of the year that company will have put more than $6,000,000 in new capital into its gas department development. At the end of the first 10 months of this year there are 31,000 more live meters than last year, giving the company a total of 413,000 live meters.

J. E. KELLEY IS ELECTED TO COMPANY DIRECTORATE

Friends of J. E. Kelley, and they include everyone in the Pacific Coast Gas Association, will be pleased to learn that he has been elected a member of the Board of Directors of the Western States Gas & Electric Company. The election increased the board from seven to nine members, E. N. O'Oyly, superintendent of the electrical department, also being honored.

ELECTROLUX-SERVEL UNIT IS AVAILABLE IN THE WEST

Word from the manufacturers of the Electrolux Servel gas-fired refrigerator has been received, to the effect that this unit is now on the Pacific Coast, and gas company orders will be listed for early delivery. The factory expects to reach a production of 300 machines a day early in 1927.

Two Examples *of* Gas Company Appliance Windows

THESE views tell a tale of aggressive gas company merchandising in the appliance field. The display on the left is the product of the Great Falls Gas Company, Great Falls, Montana. It isn't necessary to say that a genuinely excellent result has been achieved in this domestic setting. The whole atmosphere produced is one of comfort and cheer, with the Welsbach radiant gas heater the central figure. If it pays this gas company in its small community to put over the gas message in such striking manner, it will pay any gas company in any community to give similar attention to tying its window department into its sales work.

On the right is a window which does credit to the artistry of the Portland Gas & Coke Company's appliance department. The sunburst effect, with the Humphrey Radiantfire aglow in the center, is a well-chosen display device, and the other models in the window give the buyer a good selection to choose from, at special sale prices. Both of these windows exemplify good trimming, and any gas appliance dealer or sales department of another gas company could adopt them as they stand, with good results.

TEN MILLION FOOT HOLDER IS NOW IN SERVICE

LATE in November the Southern California Gas Company's new ten-million-foot gas holder was put into service. The tank is of the waterless, enclosed type, and is situated at the company's Number Three Station at Slauson and Western Avenues, Los Angeles.

The structure was built by the Bartlett-Hayward Company, the foundation having been constructed by the McArthur Pile Company. The progress of construction presents an interesting record. Ground was broken on March 12, 1926. On April 16, excavation work for the compressor was completed. The compressor foundation was poured on May 28, and on July 2, all concrete had been poured. On July 9 the tower was removed and rolled into place, and two compressors were set on the foundation, the erection of the trammel was completed on July 16, and electric wiring was installed. On August 20, ten sections of piston steel were in place, and on September 22 the piston and roof were completed and painted. At this time packing for the compressors was started, and on November 29 the holder was put into operation.

The structure weighs approximately three thousand tons, and 1700 cubic yards of concrete have been used for its foundation. It rises to a height of 356 feet, and is being painted a battleship gray.

These additional facts give some idea of the immensity of the construction task just completed: There was required a total of 1,261,600 rivets. Into the foundation went 266 piles (20 feet down). The holder is held by 48 four-inch round anchor bolts, each weighing one thousand pounds. Materials included 56,000 gallons of tar used as seal between piston and holder wall. For observation and inspection there is an elevator inside, accessible from top of holder only.

What Is Greatest Present Need *of the* Gas Industry?

Each month WESTERN GAS is publishing one of the three-minute speeches made on the above subject at the Pacific Coast Gas Association Convention of 1926. The following speech was delivered:

By C. W. DOWNS

Southern California Gas Company

TWO great factors stand out in the citizenship of any successful nation. Observe the conditions in those countries where these factors do not exist and you will find chaos or disorganized and ineffectual progress. What is true of the citizenship of nations is likewise true of the personnel of progressive industries and what is generally true of industries is particularly and emphatically true in the gas industry.

I refer to two great qualities—one of which is so simple and homely that in this sophisticated age it is often overlooked. It is loyalty. The other is a product of clean living and proper education. It is intelligence. These qualities must be complementary. Loyalty without intelligence may mean dumb allegiance, and intelligence without loyalty may serve only a selfish purpose.

Why is the great present day need of the gas industry loyal and intelligent employees? First, because the gas business can so easily become the plaything of public opinion. Given a loyal group of employees a gas company can do more to combat adverse criticism by the employees' direct contact with the public than by all the publicity in the world. Second, because its equipment and service depend upon first class brain power to manage and improve them and to keep pace with the inroads of increasing competition.

Loyalty has many names. In the army it was called *Esprit de Corps;* in the World War, *morale;* in the life of the nation, *patriotism.* In the last analysis it is the love of an institution or an ideal. There is a peculiar characteristic about this virtue. It must be instilled within the hearts of the employees from the top of the organization to the bottom. It can't come from the bottom up. It thrives on a good example but weakens when subjected to thoughtlessness. The acetylene torch fuses metal in a pipe line so that the joint becomes the strongest part of the line. Misdirect the torch and the pipe is cut instead of welded. So it will always be in the development of loyalty.

The employment and development of intelligent employees has long been accepted as necessary, but only of recent years has it been given serious consideration by scholars and executives. The head of one of our great manufacturing industries recently stated that his organization was not so much concerned with mechanical or electrical or chemical engineering as it was with human engineering. Just as science attempts to classify facts, so human engineering tries to classify, develop, and place to advantage, the intelligence of the employee. The gas industry has barely begun this phase of its work. Universities have done practically nothing until the past few years towards training young men for the gas business. Now there are several who give special courses in this great work. It is safe to say that in the near future the employment and assignment of employees will be as careful a study as any of the sciences.

In view of such a development, the gas industry will not be primarily concerned about the adjustment of rates or high construction costs or the need for improved equipment—for these problems will be solved by intelligence.

What is the greatest present need of the Gas Industry? I submit to you the two great factors, one as important as the other —each dependent upon the other; both of them promoting a healthy, happy, and prosperous era in the gas business—*Loyalty and Intelligence.*

How much of the gas heating business in your territory are you getting?

Most gas appliance dealers are losing sales every day because they haven't enough **different types** of appliances to meet all needs.

There are scores of jobs you're not even called in on—because owners and builders know you haven't what they want.

It's a different story for the dealer who carries the complete Pacific Line.

His store quickly becomes known as **"Gas Heating Headquarters."**

There isn't a job of any kind that he doesn't get a chance on—because there's a Pacific appliance made for every need from warming one room to heating a skyscraper.

You will make more money by handling the Pacific line.

You will have a complete line of appliances—with so many superior features on each one that you can **out-sell** competition.

And every Pacific appliance is backed by the largest gas heating organization in the West.

If there's no Pacific agency in your territory—let's get together and start something. Write!

The name is changed to remind you that Pacific makes all types of gas heating appliances.

Pacific Gas ~~Radiator~~ Heating Company

Gas Heating Headquarters

Largest in the West. Representatives in Principal Western Cities.
General Offices & Exhibit at 1732-40 West Washington St., Los Angeles
Telephone BEacon 2190

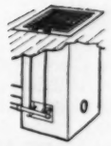
Gas-Steam Radiators

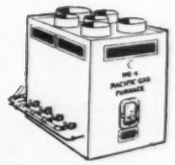
Dual Pipeless Furnaces

Wall and Fireplace Heaters

All Vented for Healthful Heat

Gas Radiators—Pressed Metal and Cast Iron


Pipeless Floor Furnaces


Unit Basement Furnace Systems

Manufacturers of Every Type of Gas Heating Appliance

PORTLAND FURNACE DEALERS WORK ON NEW ORDINANCE

The Gas Furnace Dealers Association of Portland, Oregon, are actively engaged in the promotion of "Better Warm Air Furnace Installations" for this territory. At the November meeting of the association a committee consisting of A. E. Finlay, Portland Gas & Coke Company; A. Moore, General Heating Company; E. Anderson of the Anderson Gas Appliance Company; Jimmy Lynch of Lynch Bros. C. Culbertson of C. & C. Furnace Company was appointed to work with the Sheet Metal Contractors' Association, in drafting a new city ordinance covering the manufacture and installation of Warm Air Heating Furnaces, heat pipes, return air ducts, etc. which go into the requirements for a properly heated home. This ordinance will be submitted to the city council about the first of the year.

E. A. ANGLEY SUCCEEDS GEO. R. HORNING AT SALT LAKE

Evan A. Angley, formerly general superintendent of the Utah Gas & Coke Company, has been named to succeed Geo. R. Horning as general manager of that utility, which is a subsidiary of the American Public Utilities Corporation of Grand Rapids, Mich. Mr. Horning has accepted the general managership of the Southern Gas and Power Corporation of Chicago. Mr. Angley has been with the Utah Gas & Coke Company since 1916, serving first as sales manager. In 1919 he became general superintendent. His new duties begin December 1.

SOIL CORROSION CONFERENCE

Representatives of associations and companies interested in soil corrosion held a conference at the Bureau of Standards when 2,000 samples of pipe that had been buried four years and recently dug up were inspected. These include various samples of pipe covering to prevent corrosion. The samples will be analyzed to determine deterioration that has taken place and a report showing what happened will be issued in the next two or three months.

F. M. BANKS MAKING SURVEY IN SAN JOAQUIN

F. M. Banks of the Southern California Gas Company is conducting a new business survey in some of the company's San Joaquin Valley territory, including Visalia, Tulare, Porterville, Hanford, Dinuba, Lindsay and a number of other communities. The survey will occupy a month to six weeks time after which Mr. Banks will again be at the company's Los Angeles headquarters.

GRACE JO MASON RETURNS TO TUCSON, ARIZONA

Grace Jo Mason, head of the home economics department of the Tucson Gas & Electric Light Company of Tucson, Ariz., has returned to that city to resume her duties there after having established a home economics department for the Springfield Gas & Electric Company of Springfield, Mo.

UTAH INDUSTRIES MAY PROFIT FROM COLORADO GAS

Bringing in of large gas flows on the Hiawatha Dome, Moffat County, Colorado, just across the Utah line, will have decided significance to Salt Lake City industry, if the new gas supplies are made available. The field is only 166 miles distant, by airline.

L. M. Strickland, formerly of the Fort Worth Gas Company, has become superintendent of the Tri Cities Gas Company, with headquarters at Comanche, Tex.

Co-operative Advertising *of* Gas Heating

MUCH educational work must be undertaken to put gas fuel where it should be in the domestic, as well as the industrial market. Because gas has been used to supply certain basic domestic needs, ever since the present generation of gas men can remember, it is easy to assume that everyone is "sold" on the merits of gas in the home, but this is not the case, necessarily.

At least, that is the reasoning of gas heating appliance dealers and the gas company in San Jose, Calif. A six-week campaign of cooperative dealer and company advertising in the cause of house heating by gas has just been concluded in that territory, and the example is significant of possibilities which lie in cooperative effort.

In San Jose there are 12 dealers who handle gas heating equipment. Each of these 12 dealers contributed $30 to a fund which covered the costs of newspaper space and copy preparation in the campaign just ended. The advertising was prepared by a publicity committee formed of dealers and the publicity department of the Pacific Gas & Electric Company. It featured the convenience of gas heat, and by "testimonial" advertisements got over the message that gas heat is economical heat.

The campaign was planned to cover six weeks, ads running weekly in each of the community's two papers. One insertion appeared Sunday and the other Monday of each week, making a total of 12 insertions for the campaign. Costs were in the neighborhood of $400.

On each of the cooperative advertisements appeared the names of the 12 dealers, together with the seal of the Gas Appliance Society, which dealer organization has an enterprising unit in San Jose.

While these cooperative ads were the feature most in evidence, they were only one part of a more extensive educational effort designed to sell gas heating to the public of the San Jose territory. Each dealer ran individual ads during the same period, and in the same section as the cooperative advertising appeared. These advertisements also carried the Society's seal. Special window trims, sales literature, etc., were used by the various dealers to supplement the general advertising during the six-week period of the campaign, and an effort was also made to see that existing heating installations were serviced in advance of the demands of winter.

WATER HEATER MANUFACTURER LOCATES IN PORTLAND

The Arthur & Fowler Company, manufacturers of gas and electric water heaters, have located a new factory at 373 Hawthorne Ave., Portland, Ore. A plant has been maintained at Spokane for the past 10 years. P. L. Fowler will manage the Portland plant and sales will be in charge of the A. & F. Sales Corporation of which M. Seebern is manager.

ROCKY MT. OIL AND GAS ASSN. IN ANNUAL MEETING

The program for the second annual convention of the Rocky Mountain Oil and Gas Association, Montana Chapter, to be held December 1, 2, and 3 at Great Falls, Mon., was scheduled to include addresses by A. M. McQueen, vice-president of the Imperial Oil Company, an important Alberta operating company; and C. S. Slipper, geologist of the Calgary Natural Gas Company.

SOUTHERN COUNTIES STRESSES INDUSTRIAL SALES

Following a recent addition to its industrial sales staff the Southern Counties Gas Company plans to inaugurate an aggressive policy in pushing the use of gas for industrial purposes of all kinds on its lines.

C. L. Ferry, industrial engineer for the company, now has the assistance of A. C. Miller, who formerly was with the Beacon Light Company of Los Angeles. Mr. Miller will devote his time to general industrial sales, for which there is a broad field on the Southern Counties system, which covers a great number of communities in Southern California.

Hitherto the company has placed emphasis upon the sale of gas for agricultural power purposes, and under Mr. Ferry's supervision this type of load has grown considerably. While Southern Counties gas is now used for a variety of industrial purposes this business has to date come to the company without special sales effort. The new policy means that the company will "go get" general industrial business in a more active manner than ever before.

PLANT ADDITION TO BE BUILT FOR AMERICAN REFRACTORIES

According to Earl McClintock, vice-president of the American Refractories Company of Los Angeles, a general expansion program to be undertaken by the company will include the immediate construction of a plant addition to provide an additional 7500 square feet of working space. So far this year the company has shown a 50 per cent increase in volume of business over that of last year.

The American Refractories Company supplies California's gas industry with Amreco Checker and Fire Brick, and makes many other clay products as well. It is the only concern west of the Mississippi manufacturing radiants and clay backs for radiant type space heaters and contracts are being filled with 90 per cent of the gas appliance makers of California.

WASTE HEAT BOILERS

The operation of the three waste heat boilers at the plant of the Portland Gas & Coke Company continues to be satisfactory. More than 80 per cent of the steam used in the manufacture of gas and the recovery and refining of by-products is produced on three boilers. One oil-fired boiler only is used to carry the stand-by in case of failure of electric power. Power is obtained from another company, although two 500 k.w. turbine-driven generators are provided for operation in the event of power failure.

NATURAL GASOLINE INDUSTRY OF GROWING IMPORTANCE

Natural gas gasoline produced and consumed in the United States in 1906 was valued at about $46,874,000, in 1916 about $120,227,000, and in 1925 not less than $260,422,000, while the estimate for 1926 is placed at something like $275,000,000.

NEW RATE SCHEDULE TO BE FILED BY SO. OREGON GAS CO.

Southern Oregon Gas Company announces that it will file a new rate schedule with the utilities commission of that state. A former application was suspended by the commission, pending investigation.

MIDCONTINENTAL OIL AND GAS ASSOCIATION CONVENES

Two hundred members of the Midcontinent Oil and Gas Association attended the recent convention of that body held at Dallas, Texas.

POTTER Heating

For many years POTTER Engineers have pioneered the way in the advancement of modern Gas Heating Systems. They have developed Gas Heating to such a degree of perfection that today, POTTER Products have become a standard of comparison wherever dependable, safe, economical and healthful gas heating is discussed.

OUR BEST ASSET

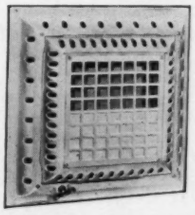
The tens of thousands of satisfied customers that our Organization has made through POTTER Gas Heating installations, is a JUST tribute to a satisfactory product—a gratification to conscientious effort.

THERE ARE MANY REASONS WHY IT IS BETTER TO INSTALL POTTER SYSTEMS

"POTTER" Vented Radiators

Only POTTER has these 7 POTTER Features (Cast Iron and Steel-Made)

1. Condensation abolished. This does away with corrosion. Many years are added to the life of the Radiator.
2. Triple Circulation. The heat goes into the room, not up the flue.
3. Uniform warmth distribution. The air is never "cooked."
4. Quick heat. No other radiator heats so quickly as the light, efficient POTTER Steel-Made.
5. Aristocratic appearance. The POTTER Cast Iron Radiator is selected for the finest and largest homes.
6. Totally odorless always.
7. Not expensive.



"COLE" Floor and Wall Heaters

Made in heavy solid cast aluminum.

COLE is the only furnace manufactured that can be installed on either the first or second floor.

"MAGIC WAY" FURNACES

"MAGIC WAY" was the first, and has always been considered the leading Unit System of heating.

The principle of Unit Heating of modern buildings, brought to its present state of refinement through the study and efforts of this Organization, is based on the principle of an individual furnace or heater for each room or group of rooms to be heated.

This type of installation allows accurate temperature control in each room, regardless of the demand in other sections of the home.

POTTER quantity production now makes "MAGIC WAY" with electric controls, available to anyone who desires a gas furnace system.

The same features that make these well known POTTER-made appliances favorites with home builders and home owners, make them popular with churches, schools, theatres, auditoriums and factories.

The low cost of adequate heating by means of "MAGIC WAY" Vented Furnaces of either the Unit or Central Plant type, will be a revelation.

"MAGIC WAY" VALVES

By merely pressing a button, the temperature of any room may be regulated. This valve not only turns the heat on but it regulates the heat to suit your exact wants.

"MAGIC WAY" Floor Furnace

When the furnace type of heat is desired at low cost or when a basement is not available, use "Magic Way" Vented Floor Furnaces.

Potter Heating Includes:

"MAGIC WAY" UNIT FURNACES
"POTTER" GAS RADIATORS
"STEEL-MADE" GAS RADIATORS
"COLE" FLOOR AND WALL FURNACES

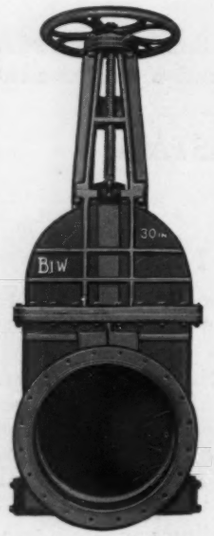
There Is a **POTTER System** for Every Need

POTTER RADIATOR CORPORATION

San Francisco—Oakland—Los Angeles—San Diego

BAKER IRON WORKS

Los Angeles, California



Manufacturers of

Gas Generating Equipment

Boilers—Tanks—Riveted Pipe

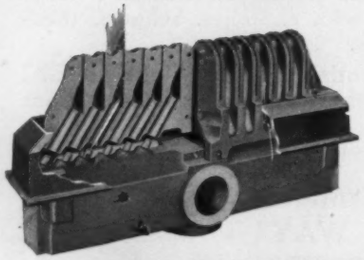
Structural Steel

Elevators—Cranes—Hoists

Gray Iron Castings

Low Pressure Valves

R. M. C. Gas Burner



Unusual design

Good construction

Exceptional results

Absolute satisfaction

ROTARY MANUFACTURING CO.

5720 Long Beach Avenue Los Angeles, California

The Beacon Automatic Storage Water Heater

Has a Brass Heating Element With Six Times the Heat Conductivity of Iron

The Beacon is a heavy duty appliance—high grade materials throughout. The boiler is made of heavy gauge galvanized iron and all seams are both riveted and welded.

In addition to the heart of BRASS the Beacon has a rust-proof BRASS circulating pipe which keeps the water clean.

Beacon Water Heater Co.

776 So. San Pedro St. Los Angeles, California

NEW GAS GENERATOR BUILDING DUE AT PORTLAND

The Portland Gas & Coke Company has signed a contract for the construction of a reinforced concrete gas generator building, 80 feet by 84 feet and 70 feet high. The building will eventually contain four 27-foot straight shot gas generators, one of which will probably be installed in 1927. One end of the building is provided with a temporary steel partition wall which can be removed for still further extending of the building. The design is in keeping with the other substantial structures and the surface of the concrete is bush-hammered, which greatly adds to the appearance.

The foundation of the building was constructed in the summer of 1926 and is carried on concrete piles approximately 45 feet long which were driven to bedrock. The operating floor of the building is 12 feet above yard level and the additional blowers and oil heaters are to be located on the lower floor.

ORGANIZE GAS COMPANY IN LAS VEGAS, NEVADA

A group of Las Vegas, Nev., men have organized the Clark County Gas Company to supply Las Vegas with artificial gas. C. O. Lauritzen is president, and H. W. Burkhart of Los Angeles is consulting engineer and purchasing agent. Property for the plant has been purchased and cleared and construction is expected to begin about the first of the new year.

Las Vegas is the "Boulder Dam" town, a railroad settlement of some 5,000. It is anticipated that gas service can be extended at a minimum of cost because of the compact nature of the community. Population increase is of course logically expected when the Boulder Dam development gets under way.

RENEW LEASE ON GAS WELL AFTER 17-DAY VIGIL

The filing on the only gas well yet commercially developed in Washington, situated in Rattlesnake Hills, Benton County, and owned by H. B. James of Tacoma, operating as the Walla Walla Oil, Gas & Pipe Line Company, was renewed on November 10—allowing the company to accept contracts for serving Kennewick and Pasco with gas. Two men put in a vigil of 17 days and nights duration outside the state land office in Olympia, to forestall any contenders who might wish to file on the expired lease.

NEW CORPORATION TO DELIVER GAS TO MONTANA TOWNS

Contracts for laying the gas line from Bowes structure to Havre, Montana, have been signed by officials of the Montana Gas Corporation, newly incorporated. Gas will come from the Hard Rock Oil Company, and will be delivered to Havre and Chinook by the Montana Gas Corporation for distribution by local companies.

NEW GAS APPLIANCES MADE BY PACIFIC HEATING CO.

An addition has been built to the Los Angeles plant of the Pacific Gas Heating Company, and that firm has added hot water heaters to its line of manufacture. The company is also featuring a new radiant type heater which is built into the wall of a residence and is vented.

EXTEND HIGH PRESSURE GAS MAINS TO EAST SAN DIEGO

Development of East San Diego is calling for extension of gas mains, and four miles of high pressure six-inch line have been laid by the company recently in this section.

Approved by A.G.A.

Notice has just been received that the entire Humphrey Radiantfire line has been approved by the American Gas Association Laboratories at Cleveland, Ohio. This high stamp of approval attests the quality which the makers of the Humphrey Radiantfire have always zealously maintained, and is significant news for the entire gas industry.

The HUMPHREY
Radiantfire
REGISTERED TRADE MARK

Manufactured by
General Gas Light Company
Kalamazoo, Mich.

Pacific Coast Manager
C. B. Babcock
135 Bluxome Street, San Francisco

The One Sure Way To Stop Joint Leaks

Makes joints 100% tight — absolutely leakproof where all other methods fail.

Throughout the gas industry this non-corrosive, greaseless compound is being used to end all trouble from leaky joints.

Due to its scientific preparation and graphite base, this paste is **oil, acid and gasoline proof.** It is soluble only in water. Of paste-like consistency, it is **easily spread** on pipe joints, fittings, flanges, flange unions, and every place where a leakproof joint is desired. **It expands under heat, filling every crack and crevice—then carbonizes.**

It renders joints not only leakproof, but easy to take apart if desired.

Key Graphite Paste will guarantee you a genuine service in every Department, from the Garage to the Power Plant.

Put up in any size container, from a one-pound can to a five hundred pound drum.

E. A. Key Company, Inc.
1301 Santa Fe Avenue
Los Angeles

KEY Graphite Paste

Chas. C. Moore & Co. Engineers, Inc.

CONTRACTORS FOR COMPLETE PLANTS

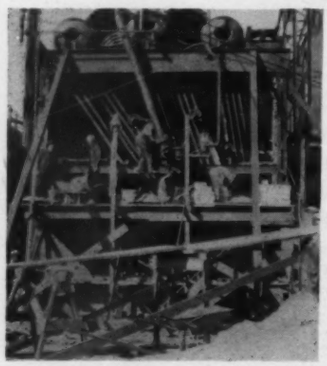
High Grade Machinery

The Babcock & Wilcox water tube boilers
Corliss high speed and poppet valve engines
Babcock & Wilcox superheaters
Hamilton compressors
Green fuel economizers
Wheeler Condenser & Engineering Co. condensing machinery
Cochrane feed water heaters (open and closed)
Cochrane feed water softeners (hot and cold processes)
Cochrane feed water metering heaters
Cochrane steam and oil separators
Cochrane flow meters
Griscom-Russell Heaters, Evaporators, Distillers, Multi-Whirl Coolers
Moore automatic fuel oil regulators
Diamond soot blowers
Lagonda tube cleaners
Copes feed water regulators
Lagonda automatic boiler stop valves
Leslie reducing valves

And All Power Plant Auxiliaries

Address our nearest office for catalogs and complete information

Home Office: San FRANCISCO, Sheldon Bldg.
New York City, Hudson Terminal Bldg.
Los Angeles, Central Bldg. Portland, Gasco Bldg. Seattle, L. C. Smith Bldg.
Salt Lake City, Kearns Bldg. Honolulu, T. H. Phoenix, Heard Bldg.
Vancouver, B. C., Standard Bank Bldg.



Brick work in progress—boiler installation L. A. Gas and Electric Co.

Any Place In The West

Established 1906

J. T. Thorpe & Son

Inc.

Fire Brick Contractors Specializing in

Gas generator, boiler, still and furnace brick, industrial furnaces, retorts, kilns, brick smokestacks.

Portland
632 Ry. Exch. Bldg.
San Francisco
417 Market St.

Los Angeles
321 W. 3d St.
Seattle
468 Stewart Bldg.

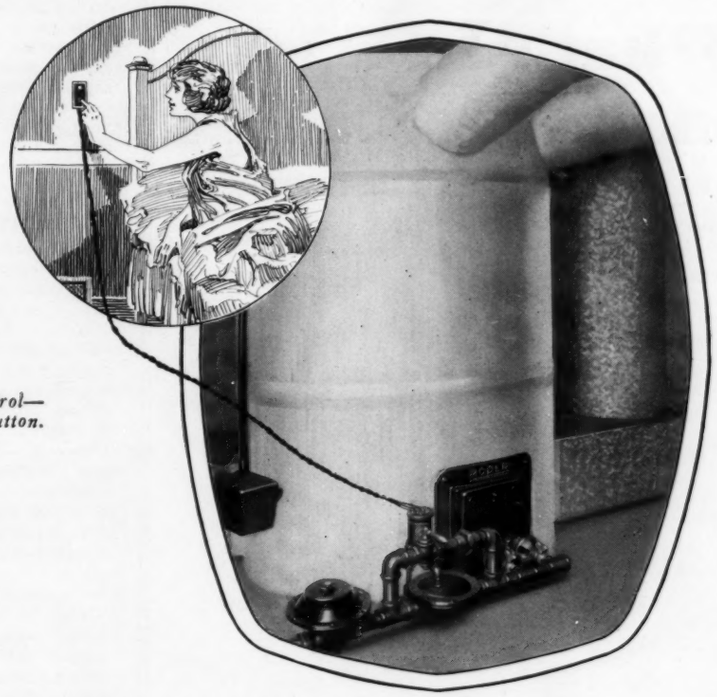
Problems *of* Gas Service

(Continued from Page 31)

which is devoid of such impurities as sulphur, naphthalene and tar. During the winter season, however, the number of gas complaints very greatly increases because of the use of greater quantities of fuel, and a great number of gas heating appliances. During this period the Los Angeles Gas and Electric Corporation receives 5,000 to 6,000 gas complaints per month, whereas during the summer season the number is less than one-half this amount. Figure No. 3 shows an analysis of complaints received per thousand consumers. The high point shown by the upper curve indicates that for the month of December, 1924, there were received about 22 gas complaints per thousand consumers. Of these complaints, nearly one-half were for the adjustment of various gas appliances. In general, this same situation pertains throughout the year, where one-half of the complaint service work is for the repair, cleaning and readjustment of gas appliances, including the cleaning of burners of cook stoves and the adjustment of heating devices. It is to be noted that the average trend of the curve indicating total number of complaints received is declining, whereas the average trend of the curve showing applience adjustment complaints is increasing. In other words, the gas company is doing more and more free service work in adjusting and maintaining gas appliances, particularly heating devices, all of which is a direct benefit to the appliance industry.

ASPHYXIATION PROBLEM

Last winter, a great deal of public attention was directed to the matter of cases of gas asphyxiation reported in this city. The public generally, and many of them who should really know better, believed that most of these deaths were the result of poor gas service. It has been a common remark to hear that there was air in the gas, or the gas was of low quality, or the chemical composition was improper, and because of one of these reasons some person has been asphyxiated. As a matter of fact, such impartial, scientific bodies as the U. S. Bureau of Standards, the Bureau of Mines, and the British Board of Trade have stated that the chemical composition has no affect upon the production of carbon monoxide, which is generally the direct cause of gas asphyxiation. Carbon monoxide is produced by the combustion of any carbonaceous fuel, gas, oil, wood or coal, when burned with an inadequate supply of air. Manufactured gas as supplied in practically every locality contains varying quantities of carbon monoxide, ranging from 3 to 40 per cent. In England, the quantity of carbon monoxide in the gas has been increased during recent years, but investigations have shown that this fact has had no affect in regard to gas asphyxiations. Carbon monoxide itself burns very readily when provided with sufficient oxygen, and is, therefore, no detriment to the quality of the gas. The U. S. Bureau of Mines, in reporting upon this subject, summarized their conclusions that, in general, the liberation of carbon monoxide is (a) due to supplying the appliance with too much gas, (b) not supplying the flame with air enough for complete combustion, (c) faulty construction of the appliance, (d) allowing the flame to impinge on metal or other surfaces so that it is chilled below the ignition point. A free burning flame, whether luminous or nonluminous, if supplied with an ample quantity of oxygen, does not produce appreciable amounts of carbon monoxide. It should be understood, both by the public and the gas industry, that the quality of the gas has no



Automatic Control—just press the button.

Automatic—Efficient—Safe

The Roper is winning home owners to Gas

Already thousands of families are enjoying the convenience, cleanliness, safety and economy of the Roper Gas Furnace. Its remarkable design and efficiency is steadily increasing the popularity of gas for home heating.

Twenty engineers, representing twenty leading gas companies, originally combined their knowledge and skill to design the Roper. Today the great facilities and experience of the entire Roper organization are back of its manufacture and merchandising.

Are you taking advantage of the new opportunities to sell this furnace and win your locality to the use of gas for home heating? Let us send you complete facts about Roper Gas Furnaces now. Mail the coupon.

A type of furnace for every need

GEO. D. ROPER CORPORATION, Rockford, Ill.

Pacific Coast Branch: 135 Bluxome St., San Francisco, Calif.

ROPER

TRADE MARK

HIGH EFFICIENCY GAS FIRED

WARM BABCOCK AIR

FURNACE

MAIL TODAY

W. G. 12

Geo. D. Roper Corporation,
Rockford, Ill.

Please send complete information about the Roper High Efficiency, Gas Fired, Warm Air Furnace.

Name .....

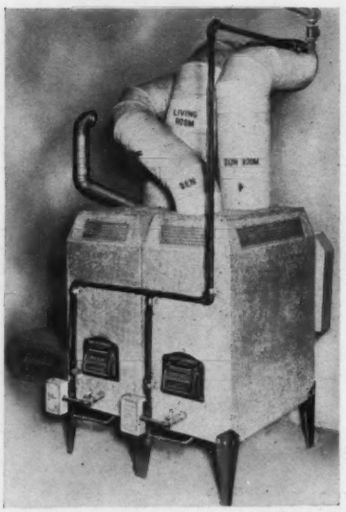
Address .....

City ..... State.....

What's In Your Consumers' Cellars

A Short Talk to Gas Company Executives—

The question is vitally important from your standpoint though possibly mildly amusing from the bootlegger's.



FOR every coal furnace being used in homes where you are selling gas you are losing important, profit-paying revenue. You can get this revenue by means of an educational campaign in which we will help.

Write us today. Team work beats single efforts.

Over 30,000 Payne Gas Furnaces now bringing revenue to Pacific Coast gas companies.

PAYNE FURNACE & SUPPLY CO. INC.

Main Office, 338 Foothill Road, Beverly Hills.
Branch, 2247 Grove St., Oakland, Calif.
Branch: 115 E. Union St., Pasadena, Calif.
Branch: 478 Sutter St., San Francisco, Calif.

Electric Weld Products---

The Wood Automatic Storage Gas Water Heater

The Standard Combination Storage Gas Water Heater

Electric Weld Range Boilers and Storage Tanks

Made and Guaranteed by

John Wood Manufacturing Co.

2437 ENTERPRISE STREET **LOS ANGELES, CALIF.**

appreciable affect upon the production of carbon monoxide in the combustion products. Such gases as producer gas, in which the combustible constituent is almost wholly carbon monoxide, will, if given proper air supply, burn completely without the production of any dangerous fumes. In regard to the possible presence of air in the gas mains, this is a condition which never occurs. No gas company would introduce into its gas any material amount of air, because of the dangers of explosion which might result. Even during the construction of new gas mains, very great care is taken to purge out all of the air in the pipes before they are connected into the system, in order that no explosive mixtures result.

In some localities, the gas may not be thoroughly purified and rather large amounts of sulphur may be present. During the burning of the gas, this sulphur produces fumes which are somewhat irritating to the nose and throat. However, in no event, are they seriously dangerous. In Los Angeles, the gas is almost entirely devoid of sulphur compounds, as this substance is not contained in the natural gas used, and when oil gas is manufactured, it is very carefully purified to remove this element.

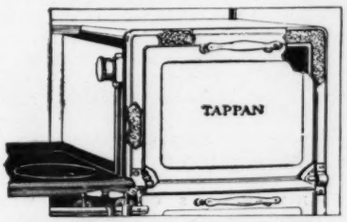
COMMERCIAL DEPARTMENT

Gas service involves vastly more than the mere pumping of gas into the mains to supply the consumer when he opens the valve. Much of this additional service is rendered by the commercial departments of the companies. When a consumer desires service he makes application to the company, and a form of contract is written out covering the service for that consumer at a given location. Then it is, of course, necessary that entries be made upon the company's ledger to provide for the proper reading of meters, billing, etc. This work requires a relatively large operating force. For the Los Angeles Gas and Electric Corporation, about 465 men and women are employed by the Los Angeles office. Eleven branch offices are operated, and a telephone system of 72 trunk lines and 400 stations is required for the communicating system. Great care is necessary in the matter of properly reading meters and preparing bills and maintaining ledger accounts accurately for all consumers. This corporation employs over 50 meter readers, about 90 bookkeepers, and over 160 collectors in its commercial department. The process of billing a consumer involves first, the reading of the meter, second, the entry of meter readings on the consumers' ledger by the bookkeeper, and the computation of the gas consumption and corresponding charge, then the preparation of a blank bill form for each consumer, which is done by an addressograph machine. This bill is then sent to the billing machines, together with the meter readers' books, and the amount of the bill, together with meter reading entries, is mechanically computed independently of the bookkeeper's figures set forth in the consumers' ledger. Following this, the completed bill is compared with the statement shown in the consumers' ledger, to avoid possible errors, after which the bill is delivered to collectors. The accuracy of billing means much in the rendering of satisfactory service, for a consumer may be very easily offended by carelessness and inaccurate billing, even though the matter is subsequently corrected.

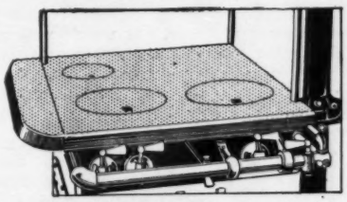
The duties of the commercial department cover, in addition to the actual billing of the consumer, a carefully planned organization to assure the consumer satisfactory and courteous service through the investigation of all complaints or difficulties which may arise. It sometimes happens that at the consumer's premises a leak may occur, moisture

What Is Competition?

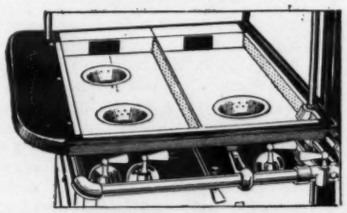
Let a man make something new, and he can sell it. When someone else begins to make practically the same article, competition enters. Multiply the number of makers and sellers of that article, and you multiply competition for them all. But if you put something new and different in the field again, the man who sells that product pulls ahead of competition.



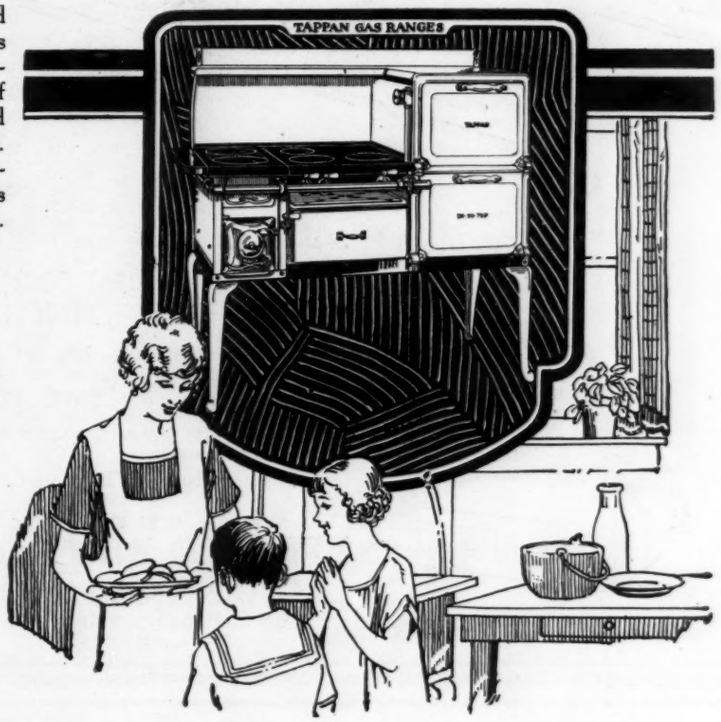
The TAPPAN oven is insulated with 25 lbs. of mineral wool, yet it is completely ventilated. The heat is kept in the oven; your kitchen is always comfortable, and half the gas is saved.



The TAPPAN solid top is made of oil-tempered, satin-finished cast iron. It will not stain or discolor, and is easy to keep clean.



The bowl burners under the TAPPAN solid top are scientifically designed for most efficient, labor-saving cooking. The combustion chamber greatly increases the heat-efficiency of the fuel. It saves gas.



In the highly competitive field of gas range sales, the dealer who sells the TAPPAN reduces competition because his product stands out from the crowd. Unique, exclusive features make the TAPPAN easier to sell—more profitable to handle.

TAPPAN INSULATED OVEN GAS RANGE

TAPPAN STOVE COMPANY

Pacific Coast Office
665 Howard Street—San Francisco

H. R. BASFORD COMPANY
Direct Factory Representatives
Northern California—Nevada—Hawaii
665 Howard St.—San Francisco

H. R. MAYER
Direct Factory Representative
Southern California—Arizona
1001 East First St.—Los Angeles

FIRE BRICK

OUR Fire Brick service is founded on 39 years experience in Clay Products.

Standard sizes for

LININGS — CHECKERS
BOILER SETTINGS

are always kept in stock. Deliveries are prompt. Our plant is especially well equipped for making special shapes according to your specifications. Fire Clay, Hollow Tile, all clay products required can be supplied by us.

Phone or write us your requirements.

LOS ANGELES
PRESSED BRICK CO
GLADDING, McBEAN & CO
621 So Hope St TRinity 5761
LOS ANGELES 283

ALUNDUM—CRYSTOLON
Heavy Duty Refractories
For All High Temperature Uses

Complete Stock of 9-inch Standard Bricks, Tile and Cements Carried

Phone TUcker 3452

Abrasive Engineering Corporation
Refractory Division
NORTON COMPANY HEAVY DUTY REFRACTORIES
617 E. Third Street Los Angeles, Calif.

Smith-Emery Co.

Chemists—Engineers

Established 1910

Analyses and tests.
Represent Pittsburgh Testing Laboratory
for inspection at Eastern foundries, mills and shops

Offices & Laboratories

245 So. Los Angeles St. Los Angeles
651 Howard St. San Francisco

may condense in the pipes, an error may be made in the meter reading, a meter may become inaccurate, or some other occurrence may annoy the consumer. In order to properly take care of these difficulties, a complaint department is maintained, along with the commercial and distribution departments, to investigate and remedy the cause of mechanical difficulties, and in the commercial department, a division specializes particularly in the adjustment of consumers' bills, and any other difficulties connected therewith. The State Railroad Commission periodically investigates the manner and promptness with which the gas corporation takes care of consumers' complaints, in order to make certain that the public receives proper service.

Under what is usually classified as commercial departments are included the accounting division, which composes complete accounting records in accordance with a complete classification of accounts prescribed for public utilities by the State Railroad Commission. Very great accuracy must be maintained in this department, inasmuch as it is held accountable for all records of capital investments and operating expenditures, which provide the basis for study when the State Commission investigates the rates for service. A further important division of the commercial department is the new business department, which is continuously in touch with building developments in the city, and soliciting of new business. Through the activities of such a department, the utility is able to render an increased service to the public, and to do a larger business, which in turn permits of a lower unit cost for the service rendered. In other words, by an aggressive policy of procuring an increased volume of business, the price of gas to the consumer can be kept at a lower figure than otherwise.

The direction and general supervision of the gas company's affairs fall under the duties of the "general" departments, which include general officers, general office departments, legal department, treasury, secretary, public relations, advertising, and welfare of employees. Along with this group, there are included many operating expenses for the conduct of the entire business, such as insurance, taxes, depreciation, etc. With a large organization such as a public utility, it is also necessary to maintain extensive warehouse facilities for handling materials and supplies required for operation and construction. The two companies serving this district carry on hand, in order to assure prompt and continued service, a stock of pipe and other materials amounting to approximately two million dollars.

In determining the cost of service for the fixing of rates, the following is a summary of operating charges which must be considered:

PRODUCTION DEPARTMENT

Oil and gas fuel.
Operating labor and supplies.

DISTRIBUTION DEPARTMENT

Labor and supplies for maintaining gas mains, services, meters and regulators.

COMMERCIAL DEPARTMENT

Cost of meter reading, bookkeeping, billing, collecting, general accounting, new business.

GENERAL DEPARTMENT

Salaries and expenses of general officers and general office force.
Legal expense, communication system, in-

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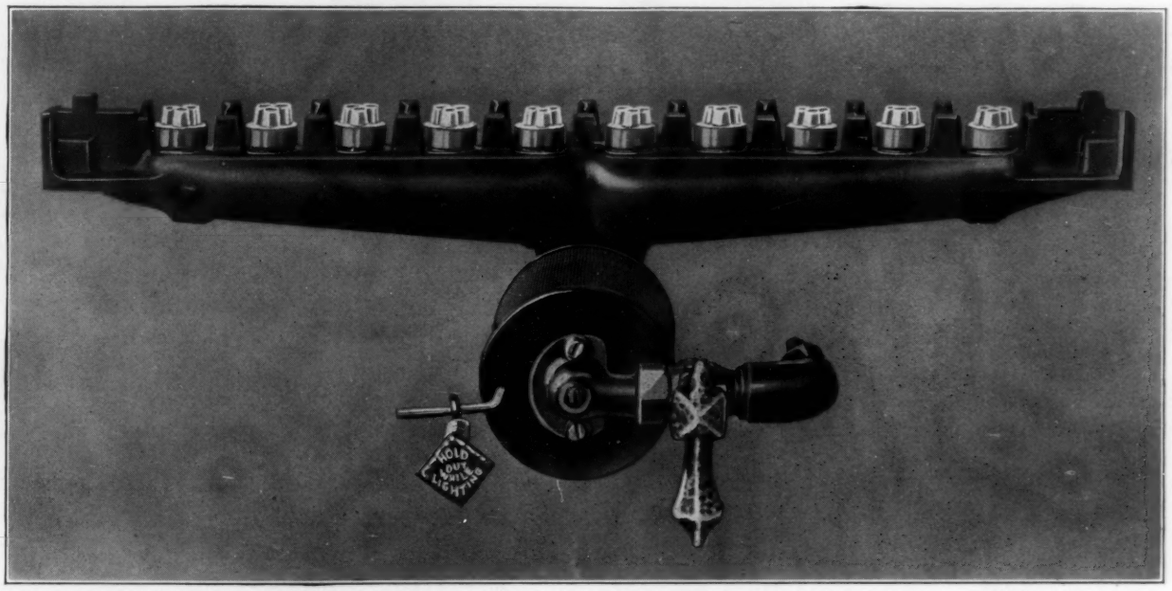


The Burner-Manifold of the Welsbach Heater

Specially designed to produce the greatest amount of heat from gas consumed and to generate steady, intense cones of flame that give an amazing volume of radiant heat at a minimum cost. A highly important feature of this burner is the fact that it adapts itself to varying gas conditions. Opposite the gas cock is shown the "choke," another Welsbach exclusive feature that enriches the mixture and assures instant ignition.

Write for NEW LOWER PRICES and folder illustrating ten beautiful models with nine exclusive features.

Welsbach Company

GLOUCESTER, N. J.

Branches in Principal Cities

San Francisco Office: 863-865 Mission Street

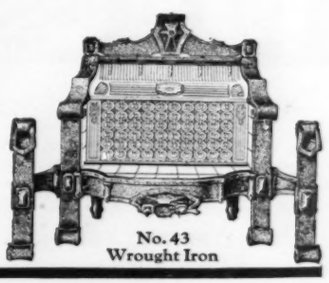
Member of American Gas Association *Member Natural Gas Association*

No. 37
Oxidized Brass

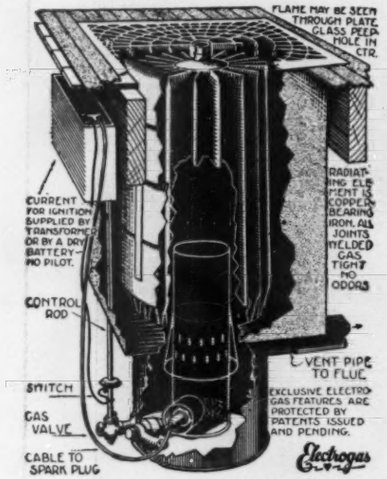
Welsbach

Self-Lighting

RADIANT GAS HEATERS



No. 43
Wrought Iron


FLAME MAY BE SEEN THROUGH PLATE GLASS PEEP HOLE IN CTR.
RADIATING ELEMENT IS COPPER BEARING IRON. ALL JOINTS WELDED GAS TIGHT NO ODORS
CURRENT FOR IGNITION SUPPLIED BY TRANSFORMER OR BY A DRY BATTERY—NO PILOT.
CONTROL ROD
VENT PIPE TO FLUE
SWITCH
EXCLUSIVE ELECTRO-GAS FEATURES ARE PROTECTED BY PATENTS ISSUED AND PENDING.
GAS VALVE
CABLE TO SPARK PLUG
Electrogas

—a good floor furnace
—three sizes

ELECTROGAS FURNACE CO.
Rialto Bldg. San Francisco

SOUTH CHESTER STEEL PIPE

Excels for Gas Service

The unusual care given to accuracy of diameter and welding qualities, makes Chester Pipe a favorite for gas lines.

SOUTH CHESTER TUBE CO.
Chester, Pa.

Interior of Spark Stove Shop No. 2 recently opened at San Francisco

Spark Stove Shop No. 2 Opens *at* San Francisco

FOLLOWING up the success of his Spark Stove Shop No. 1 at Nineteenth and Mission streets, San Francisco, Todd Williams, veteran California stove man, is now busily engaged in making an equal success of his Spark Stove Shop No. 2, at 441 Sutter street.

The new shop is ideally located between the Pacific Gas and Electric Company building and the Great Western Power Company offices, and its big display windows face a street that gets a tremendous amount of pedestrian traffic, much of this consisting of women shoppers.

Williams' new shop is a big, roomy store, containing over 5600 square feet of floor space, and presents a pleasing picture with its decorations of cream, blue and orange and its display of gleaming enamel stoves.

As its name indicates, the new shop handles Spark stoves exclusively, and specializes in the Spark Lid-top gas stove which is distinctly a California product, being manufactured in Oakland by the Hammer-Bray Company.

In both of his stove shops Mr. Williams carries a complete stove line, representing more than 70 models.

More Data *on* Services *to* Vacant Property

LOS ANGELES GAS & ELECTRIC CORPORATION
STUB SERVICES
APRIL 1ST 1926

Year	Number	Per Cent Utilized	Utilized	Per Cent	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926
1904	3	0	3	100		1								1				1									
1905	2	1	1	50		1																					
1906	133	127	6	96			1	2	1	1														1			
1909	8	8	0	0																							
1910	46	22	24	52.2						1	3	2	1	1				1		3	5	6		1			
1911	143	20	123	86							40	17	7	5	6	4	4	3	6	8	8	8	5	1	1		
1912	170	87	83	48.8								24	22	20	5	2				1		3	3		1		
1913	65	15	50	77										12	10	2	3		10	1	1	3	7			1	
1914	311	120	191	61.5										8	17	12	11	2	3	30	27	24	35	14	4	2	
1915	323	178	145	44.9											16	11	10	2	7	16	23	19	20	10	11		
1916	179	83	96	53.6												6	9	5	6	6	23	12	9	10	9	1	
1917	141	53	88	62.5														3	9	14	8	18	15	11	9	1	
1918	0	0	0	0																							
1919	96	32	64	66.7															1	28	8	11	10	3	2	1	
1920	222	30	192	86.5																71	68	34	11	5	3		
1921	313	84	229	73.2																	29	91	87	17	5		
1922	349	182	167	47.8																		28	78	45	10	6	
1923	523	296	227	43.3																			46	106	65	10	
1924	1752	1490	312	17.8																				111	130	51	
1925	1677	1479	198	11.8																					158	40	
1926	317	317	0	0																						0	
Total	6773	4574	2199	32.5		2	1	2	2	44	45	31	46	54	37	39	15	45	80	201	254	327	333	428	113		

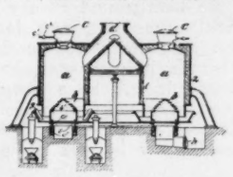
Total number of services installed, April 1, 1926, 252,859

An article entitled "The Pros and Cons of Pipe Laying in Advance of Paving," written by W. M. Henderson, superintendent of gas distribution for the Los Angeles Gas & Electric Corporation, appeared in the November issue of WESTERN GAS. In reporting the record of services installed to vacant property by the Los Angeles Gas & Electric Corporation since the year 1904 an error was made by WESTERN GAS. The figures for Los Angeles should have been as follows: Total stubs installed, 1904 to April 1, 1926: 3774; Unused as of April 1, 1926, 2529; Utilized, 1245; Per cent utilized, 32.9; total services, 208,167

The corrected figures apply to Los Angeles alone. In the table which is reproduced above is given more complete information on the services-to-vacant-property situation, over all of the company's system.

THIS MONTH'S PATENTS PERTAINING TO THE INDUSTRY

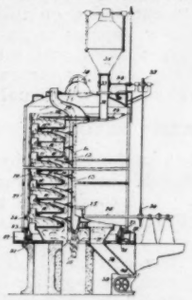
1,581,159. GAS PRODUCER WITH A REVOLVING GRATE. WALTER BENNHOLD, Furstenwalde, Germany, assignor to Julius Fintsch Aktien-Gesellschaft, Berlin, Germany. Filed Aug. 18, 1920. Serial No. 404,485. 2 Claims. (Cl. 48—66.) (Granted under the provisions of the act of Mar. 3, 1921, 41 Stat. L., 1313.)



1. A gas producer having an annular body presenting spaced exterior and interior walls, fuel hoppers above the annular chamber formed between such walls, gas outlet passages leading from said chamber through said inner wall, and an annular grate arranged in the bottom of said annular chamber.

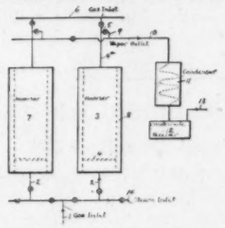
1,599,072. PROCESS OF SECURING UNIFORM REVIVIFICATION OF ACTIVATED CARBON. VICTOR S. ALLIEN, New York, N. Y., assignor to Darco Sales Corporation, New York, N. Y., a Corporation of Delaware. Filed July 16, 1924. Serial No. 726,288. 5 Claims. (Cl. 252—3.)

1. The process of revivifying activated carbon, which consists in supporting it in comparatively thin layers upon a series of superposed substantially flat and level interiorly heated shelves whereby the material is out of contact with the heating means, advancing the material in separate portions along the several shelves, and maintaining the shelves at successively higher temperatures from the upper to the lower.

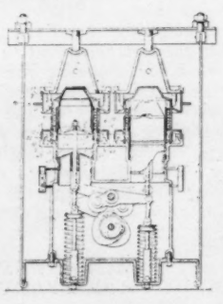


1,595,681. PROCESS FOR THE RECOVERY OF HYDROCARBON VAPORS AND DERIVATIVES THEREOF. GEORGE G. OBERFELL, New York, N. Y., assignor, by mesne assignments, to Gasoline Recovery Corporation, a Corporation of Delaware. Filed Dec. 6, 1919. Serial No. 342,881. 6 Claims. (Cl. 196—8.)

5. The process of recovering gasoline from natural gas, which consists in contacting the natural gas with activated carbon whereby the gasoline is absorbed by the carbon, then subjecting the carbon and the absorbed gasoline to a distilling treatment to vaporize the gasoline and finally condensing the gasoline vapors

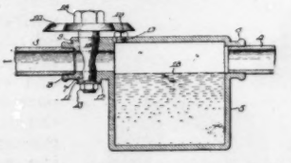


1,534,794. HEAT EXCHANGER. IVAR LUNDGAARD, Hartford, Conn., assignor to The Automatic Refrigerating Company, Hartford, Conn., a Corporation of New Jersey. Filed Mar. 30, 1922. Serial No. 548,219. 3 Claims. (Cl. 257—261.)



3. A heat exchanger comprising in combination a cylindrical wall enclosing an annular chamber forming a portion of the path for a mediating fluid, a second annular chamber surrounding said first cylindrical wall and adapted to contain a fluid with which heat is exchanged, a series of flanged metallic leaves disposed in contact with each other completely around said first named annular chamber and in heat conductive relation at their edges with the wall separating the two annular chambers and a plurality of metallic leaves in said second annular chamber in heat conductive relation at their edges with said wall

1,598,888. STOPCOCK FOR GAS MAINS. PETER STEIN, Chicago, Ill., assignor of one-half to George A. Young, Chicago, Ill. Filed Jan. 30, 1926. Serial No. 84,932. 2 Claims. (Cl. 137—72.)

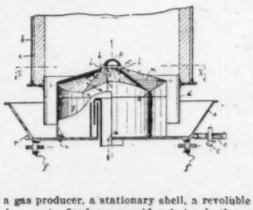


1. In a device of the class described, the combination of a gas main having two fixed pipe sections spaced apart, a container located between said pipe sections and in communication therewith, said container having a chamber out of line with the direct path of travel of the gas from one of said sections to the other section but exposed to said path, a removable closure located in the upper part of the container near the adjacent end of one of said pipe sections, a shut-off valve rotatably mounted in the path of travel of the gas near said closure, and a guard plate fixed on said valve and having a part extended over said closure when the said valve occupies an open position.

1,598,985. PROCESS FOR REMOVING HYDROGEN SULFHIDE FROM GASES. THEODORUS PETRUS LUDOVICUS PETIT, Velsen, Netherlands. Filed Mar. 7, 1923, Serial No. 623,545, and in the Netherlands Mar 16, 1922. 3 Claims. (Cl. 23—181.)

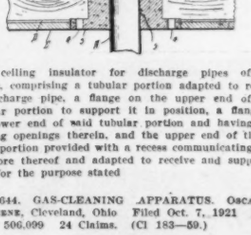
1. A cyclic process of continuously removing hydrogen sulphide from gases, essentially comprising the following steps in combination: washing the gas with an alkali-metal carbonate solution to absorb the hydrogen sulphide therefrom; passing a gas containing carbon dioxide through the washing solution to expel the absorbed hydrogen sulphide; heating the solution thus obtained to regenerate the alkali-metal carbonate solution by decomposing the bicarbonate which was produced and to liberate excess carbon dioxide; passing through another supply of washing solution the liberated carbon dioxide in concentrated condition; and then washing, with the regenerated alkali-metal carbonate solution, a fresh supply of the hydrogen-sulphide-containing gas.

1,599,022. GAS PRODUCER. ARTHUR HENRY LYNN, Westminster, London, and NIELS EDWARD RAMBUSH, Stockton-on-Tees, England. Filed Apr. 24, 1919, Serial No. 292,428, and in Great Britain May 17, 1918. 6 Claims. (Cl. 48—66.)



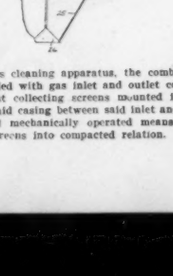
3. In a gas producer, a stationary shell, a revolvible ash bowl and a grate fixed upon said ash bowl, the upper side of said grate being formed of a plurality of wave-like sectors radiating from the axis of rotation of said grate, said wave-like sectors being relatively wide in the horizontal direction and gradually rising to a peak and thereupon sloping gradually downwardly, thereby providing only a few upwardly directed projections

1,597,577. CEILING INSULATOR FOR DISCHARGE PIPES OF GAS STOVES AND GAS WATER HEATERS. FREDERICK M. BROWN, Los Angeles, Calif. Filed Apr. 9, 1925 Serial No 21,956. 1 Claim (Cl. 126—314.)



A ceiling insulator for discharge pipes of gas stoves, comprising a tubular portion adapted to receive a discharge pipe, a flange on the upper end of said tubular portion to support it in position, a flange on the lower end of said tubular portion and having ventilating openings therein, and the upper end of the tubular portion provided with a recess communicating with the bore thereof and adapted to receive and support a pipe for the purpose stated

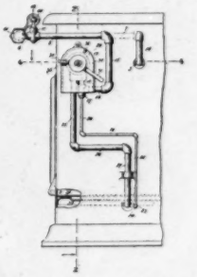
1,598,644. GAS-CLEANING APPARATUS. OSCAR V GREENE, Cleveland, Ohio Filed Oct. 7, 1921 Serial No 506,099 24 Claims. (Cl 183—59.)



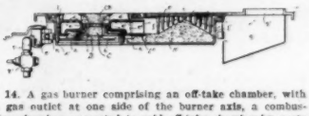
1 In a gas cleaning apparatus, the combination of a casing provided with gas inlet and outlet connections, a series of dust collecting screens mounted in a vertical position in said casing between said inlet and outlet connections, and mechanically operated means adapted to move said screens into compacted relation.

1,596,134. GAS RANGE. CLARENCE F. WILEY, Taunton, Mass., assignor to Magee Furnace Company, Boston, Mass., a Corporation of Massachusetts. Filed Dec. 16, 1924. Serial No. 756,268. 2 Claims. (Cl. 236—15.)

1. In a gas range, the combination comprising an oven, a broiler burner located in the oven, a gas fixture by which gas is admitted to the broiler burner, a cock controlling the passage of gas through said fixture, an oven burner for heating the oven, a pilot light for lighting the oven burner, a gas fixture common to both the oven burner and its pilot light and connecting by branch connections with the oven burner and its pilot light respectively, a cock controlling the passage of gas through said fixture common to both the oven burner and its pilot light, a thermostatic device located in the branch connection leading to the oven burner by which gas admitted through said connection will be directed to pass through said thermostatic device and be controlled thereby, said thermostatic device having an actuating thermostatic element located within the oven, and means whereby the pilot light will be lighted independently of the lighting of the oven burner upon the opening of the cock which controls the admission of gas to said oven burner and pilot light respectively.

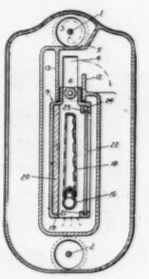


1,582,634. GAS BURNER. HENRY C. CALDWELL, Buffalo, N. Y. Filed May 19, 1924. Serial No. 714,313. 18 Claims. (Cl. 158—99.)



14. A gas burner comprising an off-take chamber, with a gas outlet at one side of the burner axis, a combustion chamber connected to said off-take chamber by ports distributed about said axis, and a multiplicity of gas supply channels opening to said combustion chamber at points distributed about said axis, said parts and elements forming paths so relatively proportioned that such of those paths which open to said off-take chamber at points remote from said outlet offer less resistance to gas flow therethrough than do the paths opening to said chamber nearer to said outlet.

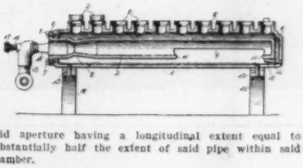
1,598,885. GAS RADIATOR. GEORGE P. SCHMITT, Oakland, Calif. Filed Jan. 14, 1926. Serial No. 81,238. 1 Claim (Cl. 126—9.)



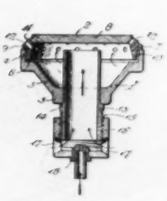
In a gas radiator comprising separable gas-circulating loops secured together so as to form longitudinally through the radiator a combustion passageway closed by end walls, said loops opening into each other at the top thereby defining a superheater chamber, a fire box provided at its top with an open reduced portion fitting in the said longitudinal passageway and with its closed ends detachably secured to said end walls, the fire box also having an open front wall and an open bottom; the front wall having at the bottom an inward and upward turned edge forming a longitudinal groove: a downward flange formed at the top of the fire box and under the reduced portion so that thereby a longitudinal groove is formed at the front of the fire box and above the first-mentioned groove; a gas burner mounted longitudinally in the fire box and near the bottom thereof; and a transparent plate slidably and removably mounted in said grooves and normally closing said front wall

1,596,452. GAS BURNER. HERBERT M. REEVES and CARL E. FROELICH, Ironton, Ohio, assignors to The Ironton Stove & Manufacturing Co., Ironton, Ohio, a Corporation of Ohio Filed Nov. 13, 1924. Serial No. 749,726. 5 Claims. (Cl. 158—114.)

5. In a gas burner, the combination of a horizontal cylindrical chamber, a plurality of burners arranged on the upper side of said chamber, a pipe extending into said chamber substantially the full length thereof for introducing fuel therein, said pipe having an elongated aperture in its lower side adjacent its inner end only, said aperture having a longitudinal extent equal to substantially half the extent of said pipe within said chamber.

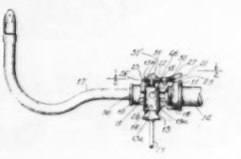


1,598,996. GAS BURNER. FRANK H. WILLCOCK, Washington, D. C. Filed Sept. 5, 1925. Serial No. 54,802. 3 Claims. (Cl. 158—99.)



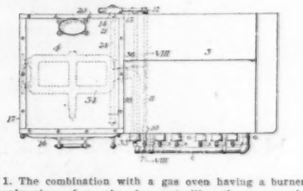
1. A gas burner comprising a hollow body open at its top and having a relatively contracted open bottom, a mixing tube extending through the open bottom of the body and above and below the same, said body slidably engaging said tube and the latter having a shoulder intermediate of its length on which said body rests and by which it is supported, a burner cap mounted upon and closing the top of the burner body, said cap having a flange depending into the body below the upper end of the mixing tube, the latter extending into the space bounded by said flange and terminating below but in said close proximity to the crown wall of said cap and fuel and air supplying means at the lower end of said tube.

1,584,270. GAS COCK. JOSE MARTINEZ BARDERA, New York, N. Y. Filed Oct. 23, 1922. Serial No. 596,297. 1 Claim. (Cl. 251—164.)



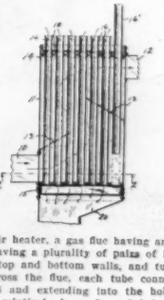
A safety gas cock comprising a casing having threaded hub end portions, a rotatable key secured in said casing between said end portions, said key having a shut off body portion, a finger piece formed integral with the body portion at one end thereof and a spindle on the other end of said body portion arranged to extend through the casing, a stop-pin secured to the body portion adjacent said finger piece for engaging with a portion of the casing to positively stop the key in closed position, a single flat washer mounted on the end of the spindle, said washer having an opening therein shaped partly cylindrical and partly flat, and two diametrical slots extending inwardly from the rim of the washer on each side of said flat opening portion, the end of the spindle being shaped to correspond with said opening for retaining the washer to move therewith, a pin to releasably engage with said slots for positively locking the key in closed position, a spring pressed thumb-lever disposed longitudinally of said casing to lift said pin out of engagement with said slots for releasing the key, and an upstanding bearing on the threaded hub portion of the casing to pivotally support said thumb-lever.

1,584,400. GAS RANGE. FREDERICK W. ROBERTSHAW, Pittsburgh, and GEORGE A. ROBERTSHAW, Greensburg, Pa. Filed Apr. 13, 1923. Serial No. 631,825. 12 Claims. (Cl. 126—39.)



1. The combination with a gas oven having a burner supply pipe, of a valve for controlling the gas supply to said pipe, said valve being located at the rear portion of the oven, a thermostat for controlling said oven extending within the upper portion of said qven, and a setting device for the thermostat carried by the thermostat and located at the forward portion of the oven, substantially as described

1,584,222. AIR HEATER. CHARLES J. HANIMAN, Bayonne, N. J., assignor to The Babcock & Wilcox Company, Bayonne, N. J., a Corporation of New Jersey. Filed Aug. 9, 1922. Serial No. 580,720. 6 Claims. (Cl. 257—167.)



4. In an air heater, a gas flue having an inlet and an outlet and having a plurality of pairs of holes in alinement in its top and bottom walls, and tubes extending vertically across the flue, each tube connecting a pair of said holes and extending into the hole in the top wall with a relatively loose fit and being unconnected thereto, the holes in said bottom wall being surrounded by conical cavities with the greater diameter at the top, the lower ends of said tubes being seated against said conical cavity and held in position by gravity.

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FLANGES MFG'D TO SPECIFICATIONS

A. G. A. Laboratory

(Continued from Page 24)

people. It is inevitable that the Laboratory will constitute the background of the most effective good will advertising ever done by the gas industry. The story will be simple, and everyone in the industry can have a part in its telling. It will be a story that can be told by the American Gas Association through the medium of national advertiseing and applied locally by gas companies themselves.

The Laboratory constitutes a new force behind gas sales. It is now possible to offer consumers gas ranges, heaters, and tubing, and will soon be possible to offer other appliances conforming to national standards of safety and performance.

It is not difficult to visualize the time when it will be almost impossible to market an appliance which does not bear the Laboratory seal of approval, which will be demanded as a mark of excellence by the consuming public. Here is an opportunity for commercial men to capitalize on this great work, and give a new impetus to gas appliance sales. Gas companies and manufacturers will find in the seal of approval, merchandising possibilities of exceptional value.

INDUSTRIAL RESEARCH

It is possible that in the great stimulation given to industrial sales in recent years, the gas companies may find further aid through the Laboratory. Instead of hundreds of individual companies conducting industrial research work, this may be carried on largely by the Laboratory and it is possible that the resulting savings alone in this direction will more than pay the entire operating cost of the Laboratory itself as well as give us the benefit of a national research group of the highest ability.

We may well be proud of the fact that ours is one of the first great industries to establish a national research and testing organization dedicated to the improvement of public service. In this manner, the industry has met its obligation to the public for the most convenient, economical, and safe utilization of an essential product.

Evansville Gasoline Plant

(Continued from Page 29)

in steam heated buildings, to keep temperatures above freezing point.

Loading, before the construction of the present pipe line, was made into tank cars, under pressure. A McDonald Dome Top was used, giving vision to the surface of the liquid through glass ports. Vent gases were taken back and reabsorbed at the plant proper. Loading losses were kept to 6.25 per cent under this practice.

After going through the Standard Engineering plant the gas is transmitted to Casper and distributed for domestic consumption. There is no artificial gas service in Casper. Industrial consumers on the New York Oil Company's gas lines are mostly refineries. Those of the White Eagle Refining Company, Texas Company, Continental Oil Refining Company, and the Midwest Refining Company are among them.

BULLETIN ON CAMERON PUMP PREPARED BY I-R COMPANY

A new and revised edition of the Ingersoll-Rand Company's bulletin covering the Cameron single-stage, double-suction, volute pump, designated as No. 7059, may now be had from the company by addressing its offices, 11 Broadway, N. Y.

NEW CORPORATION TO BRING GAS TO LONG BEACH

HEADED by C. O. G. Miller, president of the Pacific Lighting Corporation, and William G. Kerckhoff, president of the Southern California Gas Company, a new corporation is being formed to supply the city of Long Beach, Calif., with natural gas from the Ventura avenue field. The company will be jointly controlled by the Pacific Lighting Corporation, the Southern California Gas Company and Midway Gas Company.

The new corporation is to be a pipe line company, and will construct a line from the Ventura field to Long Beach to deliver gas for distribution by the municipality. Estimated cost of the project, work on which will begin in about 45 days, is between $2,000,000 and $2,500,000. The line calls for a compressor station, which will be erected at Ventura with a gas capacity of about 30,000,000 cu. ft. a day.

PUBLIC SERVICE BUILDING GOING UP IN PORTLAND

Construction of the Public Service Building, which is to house the Portland Gas & Coke Company, the Northwestern Electric Company and the Pacific Power & Light Company has begun, and the structure is expected to be ready for occupation December 1, 1927.

This newest of utility homes will exemplify all that is modern and best in office edifices, being erected of steel and concrete construction, of Italian Renaissance architecture. It will rise to a height of 220 feet at its location on the east side of Sixth Street, between Taylor and Salmon; the cost is estimated at $1,500,000.

There are to be fifteen and one-half stories, with two basements. The first two stories will cover a half-block area and the remaining stories will rise from the central 100 feet of the location, presenting a tower-like effect. The building will be the tallest structure in Portland.

COAST COUNTIES G. & E. CO. COMPLETES NEW LINE

A six-inch gas line, eight and a half miles in length, has just been finished by the Coast Counties Gas & Electric Company, involving the extension of gas service to the communities of Rodeo, Pinole and Tormey, Calif.

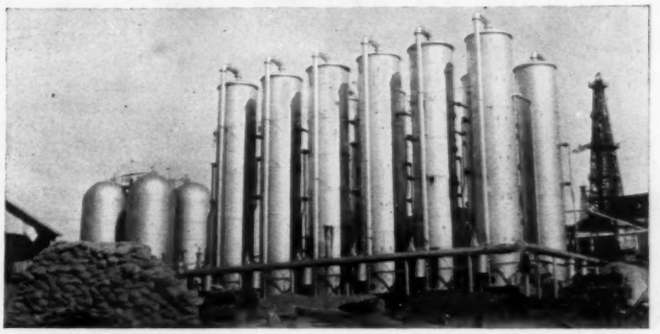
The Pacific Gas & Electric Company is at present constructing an eight-inch line from Richmond to the town of Grant, and the Coast Counties Contra Costa district, between Grant and Pinole. This will give the Coast Counties, Contra Costa district, two sources of gas supply—the new P. G. & E. line, and the company's own plant at Pittsburgh, Calif.

J. W. MASHAW TRANSFERRED TO MIDCONTINENT AREA

J. W. Mashaw of the Division of Mineral Resources and Statistics, United States Bureau of Mines, who has been in charge of petroleum statistical work at the San Francisco offices of the Bureau, has been transferred to the Midcontinent area. His former work will be handled by E. T. Knudsen. Mr. Mashaw rendered some very effective service to the natural gasoline industry of California, organizing the work of taking natural gasoline statistics for that state. His new work represents a larger field of activity for him.

RAINBOW OIL HAS BIG STRIKE

Rainbow Oil Company, drilling in the LaBarge field in Southwestern Wyoming, encountered an open gas flow of 40,000,000 cu. ft.



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NATURAL GAS GASOLINE OPERATIONS

Compiled by J. W. MASHAW

Department of Commerce, Bureau of Mines, Division of Mineral Resources and Statistics

ONE hundred and forty-five natural-gas gasoline plants. with a daily indicated capacity of 1,177,821 thousand Cubic Feet, report a recovery of 35,759,319 gallons of natural-gas gasoline from 25,672,879 thousand cubic feet of gas treated in October. This is an increase of 1450 barrels in daily average production.

Utilization of natural-gas gasoline amounted to 880,072 barrels, an increase over September of 113,490 barrels. Daily average utilization of 28,390 barrels was 925 barrels more than daily average production of 27,465 barrels.

Stocks of natural-gas gasoline at the end of October amounted to 269,451 barrels, of which 33,906 barrels were reported by natural-gas gasoline plant operators and 235,545 barrels by refinery operators. This is a decrease of 28,660 barrels under September stocks. This stock figure of 269,451 barrels is approximately nine and one-half days supply at the current rate of consumption.

Production of gasoline during the month of October amounted to 4,374,839 barrels, a daily average of 141,124 barrels. This is an increase of 388,452 barrels or 9.75 per cent over the September output and 582,953 barrels or 15.36 per cent over the output of October, 1925.

Of the gasoline produced 4,443 barrels were reported as finished gasoline produced by natural-gas gasoline plant operators. Production of gasoline from cracking processes increased in October to 317,633 barrels.

Stocks of gasoline show an increase of 80,275 barrels during October and at the end of the month amounted to 9,690,233 barrels. This stock figure includes 123 barrels of finished gasoline reported by natural-gas gasoline plant operators.

CALIFORNIA NATURAL GASOLINE PRODUCTION, DISTRIBUTION AND STOCKS
OCTOBER, 1926

PRODUCTION

Type of Plant	*Gas Treated M.C.F.*	*Natural Gas Gasoline Produced Gallons*	*Gasoline Recovery per M.C.F. Gas Treated*
Oil Absorption	10,958,617	* 15,697,055	1.432 Gal.
Compressor	321,299	533,505	1.661 "
Combination Comp. and Oil Absorption	8,626,825	* 13,636,646	1.581 "
Combination Oil and Charcoal Absorp.	4,702,558	5,691,192	1.210 "
Charcoal Absorption	1,063,580	189,758	.178 "
Drip	.....	11,163	.....
TOTALS	25,672,879	35,759,319	1.393 Gal.

Finished Gasoline produced at plants—4,443 Bbls.

DISTRIBUTION

Stocks first of month	.....		298,111 Bbl.
Production during month	.....		851,412 "
Quantity mixed with crude or unfinished oils	290,698 Bbl.		.....
Used in blending at refineries	547,660 "		.....
Stocks end of month	269,451 "		.....
Used at plants, Shortage and evaporation losses	13,716 "		.....
Balance	27,998 "		.....
TOTALS	1,149,523 Bbl.		1,149,523 Bbl.

STOCKS

Natural-gas gasoline held by natural gas gasoline plant operators	1.424,058 Gal.	or	33,906 Bbl.
Natural-gas gasoline held by refiners	9,892,890 "	"	235,545 "
TOTALS	11,316,948 "	"	269,451 "

Finished Gasoline (Motor Fuel) held by Natural Gas Gasoline Plant Operators: 123 barrels.

* A number of plants formerly classified as Oil Absorption plants are now classified as Combination Compressor and Oil Absorption plants and commencing this month their output will be shown under Combination plants. Corrected figures back to January, 1926, will be published in the annual summary.

GASOLINE PLANTS FOR ROXANA PETROLEUM AND SKELLY OIL

Roxana Petroleum Corporation has just completed installation of a gasoline absorption plant in the Braman, Oklahoma district, and is putting in two others in the Texas Panhandle, one at Horger and another at Pampa. Skelly Oil Company also has a plant in operation at El Dorado and is shipping two plants to the Texas Panhandle.

ABSORPTION PLANT AT SEAL BEACH FOR RICHFIELD

Richfield Oil Company has a gasoline absorption plant under construction on the Selover lease at Seal Beach, Calif., to handle the gas developed in the Marland Oil Company's Selover No. 1.

UNION OIL HAS PLANS FOR COLORADO GASOLINE PLANT

The Union Oil Company of California is marketing and using approximately 2,500,000 cubic feet of natural gas daily from its Wellington and Fort Collins fields. The company is using more than 1,500,000 cubic feet daily in carrying on its own operations. Gasoline will be extracted from the gas as soon as equipment is installed.

BUILD SECONDARY SETTLING TANK AT PORTLAND

The Portland Gas & Coke Company have just placed in service a four-compartment secondary tar settling tank of 90,000 gallons capacity. The tank is of reinforced concrete construction, replacing wooden tanks installed when the plant was built 14 years ago.

L. A. SERVICE GROUP OF P. C. G. A. IN INTERESTING SESSION

ON the evening of November 3 the distribution department of the Los Angeles Gas & Electric Corporation acted as host to the members of the company's Service Group of the P. C. G. C. About a hundred were present to partake of mulligan stew, listen to a company orchestra, and attend the meeting which followed the supper.

The program of the evening included three-minute orations and an actual demonstration of how a gas service is installed, including the operations of brazing, service connection, testing pipe, tapping, setting meter, etc., clear through to the lighting of the appliance.

New directors of the Service Group were elected, those chosen being W. M. Henderson, H. H. Ranlett, D. L. Scott, O. L. Moore, S. Poorman, Roy C. Gardner and Geo. S. Campbell. At a subsequent meeting of the directors D. L. Scott was elected chairman of the board, and H. H. Ranlett secretary-treasurer. The former committee on personnel and committee assignments, consisting of W. M. Henderson, O. L. Moore, E. N. Simmons, T. N. Kellett and Frank Weiss, was reappointed. Three more meetings of the Service Group will be held before the annual convention of the P. C. G. A.

P. G. & E. ASKS TO ISSUE MORE STOCK TO EMPLOYEES

The Pacific Gas and Electric Company has applied to the California Railroad Commission for authority to issue and sell $1,000,000 first preferred capital stock, and $1,000,000 par value of common stock to its employees, and to use the proceeds to reimburse its treasury and finance additions and betterments.

ALLAN FESSLER, GEN'L SUPT. OF SANTA MARIA GAS CO.

Allan Fessler, formerly with the Santa Maria Gas Company at San Luis Obispo, Calif., is now located at Santa Maria, having been appointed general superintendent of the company on the death of L. F. Chandler.

BUILD CARBON PLANT

The first unit of a $150,000 carbon black plant is under way for the United Carbon Company in Grand County, Utah.

SUCCESS OF GAS HEATING IS DEMONSTRATED IN PORTLAND

Several large gas heating installations are under way in Portland at the present time. Chief among these are a number of large churches and public buildings requiring a large amount of heated air in conjunction with mechanical ventilation. Among these are the Grace Memorial Episcopalian Church, the Kenton Methodist Church the Rose City Branch Library, the Alameda Theater, each requiring a furnace having a capacity of 8,000 to 10,000 cu. ft. of air per minute.

These installations have been made by building up a furnace consisting of a battery of from four to six Gasco furnaces through which the air is circulated by means of a centrifugal fan, belt driven by an electric motor.

There are about 20 of these installations in Portland that have been made during the past two or three years, so that the period of skepticism is past. The engineers of the Portland Gas & Coke Company are at present engaged in preparing layouts for the installation of heating equipment in four churches and two fraternal buildings that will be heated with gas.

STANDARD OR PORTABLE

Newton Plants Make Records

The Profit Process

38,000 Gallons Per Day

The Mid-Continent Petroleum Company, operating a ten million foot NEWTON STANDARD PLANT on approximately half that amount of gas, *is producing 38,000 gallons of high grade gasoline per day.* It is recovering 92 to 95% gasoline from UNCONDENSED REFINERY AND CRACKING PLANT VAPORS.

20,000 Gallons Per Day

The Independent Oil and Gas Company has a NEWTON PORTABLE PLANT near Seminole, Oklahoma. This plant is rated by us for 4500 gallons *but it is making as high as 20,000 gallons per day.* Its exceptional flexibility and capacity is equaled only by its complete freedom from trouble.

Don't Delay Investigation

Write, wire or phone for complete details. Delay in investigating Newton Equipment may be costing you money every day.

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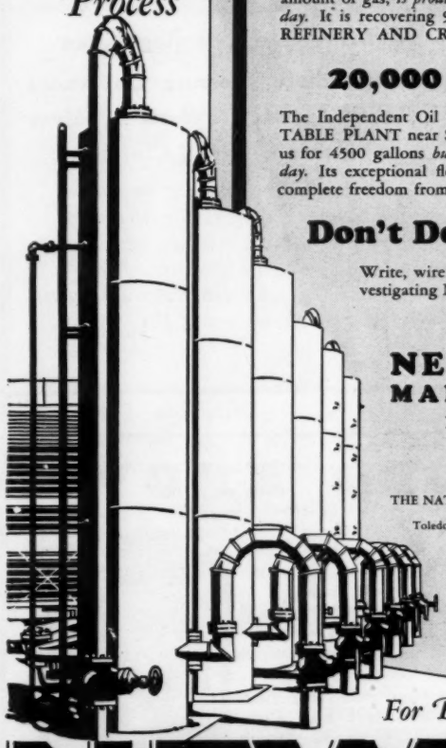

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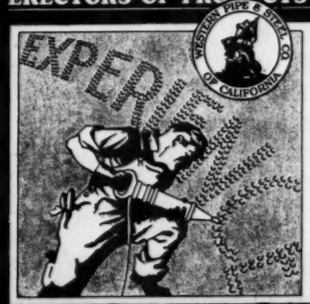

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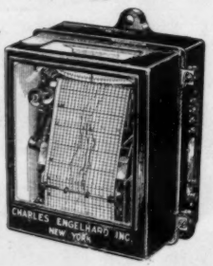

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E	Pressure	I	I	E	I	Unison Telemetric Gauge
R	District		F	R	P	Gas Timers
N	Reverse Flow	D	Y	I	M	Gauges
O	Fuel Gas	E	I	A	E	Street Department Tools
R	Service		N	L	N	Gas Tape
S	Special	S	G	S	T	Miller Packing

Connelly Iron Sponge & Governor Co.

New York San Francisco Chicago

ADVISORY BOARD OF GAS APPLIANCE SOCIETY TO MEET

A one-day meeting of the advisory board of the Gas Appliance Society of California will be held in San Francisco on January 26, 1927. The meeting will convene at 2:30 in the afternoon, and an evening banquet will be held.

HOUSE HEATING BOOKLET IS ISSUED BY TACOMA CO.

To promote the use of gas for house heating, the Tacoma Gas and Fuel Company, Tacoma, Wash., has published a booklet entitled "What Price Comfort—in Your Home." Typical Tacoma homes using gas for heat are shown in the publication.

NEW BOOKLET IS ISSUED ON REFRACTORIES

The Abrasive Engineering Corporation of 617 E. Third Street, Los Angeles, announces that a new 40-page booklet telling what refractories are and how to choose the right material for different applications has been issued.

STOCK ISSUE UNDERWRITTEN FOR IMPERIAL VALLEY CO.

E. D. Levett Company of Los Angeles has underwritten a $580,000 stock issue for the Inland Empire Gas Company, of which H. W. Burkhart is president. The company has been organized to extend gas service to Imperial Valley, Calif. communities.

WYOMING GAS FLOW

In the south end of Baxter Basin, southeast of Rock Springs, Wyo., a 60,000,000 cu. ft. flow of gas has been encountered in drilling for oil.

SAN DIEGO EMPLOYEES GIVE EVENING OF VAUDEVILLE

The employees' association of the San Diego Consolidated Gas & Electric Company put on an evening of vaudeville at the Spreckels Theatre on November 22.

MARLAND OF CALIF. MOVES TO LOS ANGELES LOCATION

Headquarters of the Marland Oil Company of California have been removed from San Francisco to the Subway Terminal Building, Los Angeles.

A. P. I. CONVENTION NEAR

Oil men of the nation meet at Tulsa, December 7, 8, and 9, in the annual convention of the American Petroleum Institute.

SOLID-TOP RANGE FOR ROPER

The Geo. D. Roper Corporation, Rockford, Ill., will have a solid top range ready for distribution by January 1.

BOOKLET ON INDUSTRIAL HEATING

Buffalo Forge Company, N. Y., have prepared a booklet on industrial heating, featuring Buffalo Unit Heaters.

MAXIM SILENCER INSTALLED ON AIR COMPRESSOR

A Maxim silencer has been installed on the motor-driven air compressor in the power house of the Portland Gas & Coke Company. This compressor is equipped with automatic starter and the noise of the intake and unloader was annoying to operators, especially when using the telephone. The silencer is most effective and the operation of the air compressor is almost entirely silent, the slap of the drive belt when starting and stopping being the only noise noticeable.

Employment; Labor Turnover

(Continued from Page 20)

them. A real study of facts and a willingness to try and correct mistakes will be a staggering blow to labor tournover.

In order to get a clear understanding, why not begin to study the reasons why employees leave? Let no man quit without having his foreman find out why he is leaving. Quite naturally the various reasons may give the management some real, interesting data and it may be in their power to prevent a certain percentage of this unrest. It might be well to work on the theory, "To cure this disease, let's remove the cause." At least by so doing we have formed some basis upon which to work.

Have each foreman get in close personal contact with his men and try to determine some of their home life conditions. It is all very well to use the expression that this is paternalism or even benevolent despotism, but we must admit that all men are not grown up simply because they are 21 years of age. In other words, can all men manage their own affairs without first being taught how? For example, when we consider how many foreign people we have working for us, is it not unjust to say, "Let them work out their own salvation," when some real advice from superiors who have profited by past mistakes could make them better employees, better citizens and more contented toilers for the one common cause, efficiency?

Society as a whole holds industry reponsible for certain results. Employees therefore should not only be permitted, but must be encouraged to use their intelligence in attaining these results. Furthermore, it is a duty upon society to encourage these efforts of truth-seeking and not criticise them, which has become a fashion with certain present-day theorists.

Encourage home study, the learning of truths about their company. Do not criticise unless you know what you are talking about; don't give an answer to some question asked unless you speak from some authoritative standpoint. Encourage thrift; it is one of the best ways of keeping satisfied employees. Lay plans to encourage thrift and find out why certain men are not taking advantage of plans devised. Try and make your men see the wisdom of the home-owning idea.

THE FOREMAN

It might be well to discuss the foreman in relation to labor turnover. (The author uses "foreman" in the broad sense, meaning the man who has other men under his control, with whom he works and upon whom he depends for results.—Editor's note.)

The greatest power of man is represented by the authority of control over the actions of other men and this power needs to be used with discretion just as keenly and decisively as the judgment of the engineer at the throttle of an engine which releases its tremendous power to perform a given work.

The foreman is the "top man"; he is over others. He is in charge and he deserves it. He has worked hard and received many knocks while he was untiringly striving to make good, but he won. Having won, he must not forget that there are men under him who are perhaps trying jut as hard as he tried to make good. He must not discourage them in their labor and, above all, must not play favorites.

A foreman who plays favorites or who discriminates against his men in any way has no place in business and can do more harm to both the company and his men—

800°

—Sounds like a weather report from regions below, but it's the actual degree of heat withstood by

LUMINITE

The 800° Paint

without checking, peeling or cracking. This new paint makes possible the protection of many surfaces that heretofore were left exposed. Rapid cooling and heating will not affect "Luminite." It is Aluminum in color, but is not to be construed as an aluminum paint. It has a uniform and easy spread.

Bronzinite is similar to Luminite—in its heat resisting qualities. It is a lustrous bronze in color, adding a distinctive, decorative feature.

Write, call or phone for complete information about these two paints.

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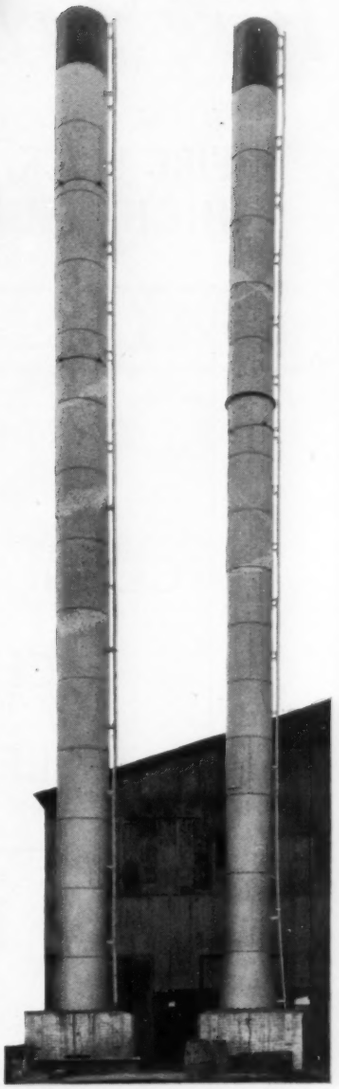

Southern California Iron & Steel Company Huntington Park, California
Showing Two Stacks Subject to Intense Heat, Painted with LUMINITE

FITTINGS

You can order fittings of any kind for immediate delivery from our large stock.

We also produce:

FLINTCAST **CORROSIRON**
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FIRE BRICK, INSULATING BRICK
HIGH TEMPERATURE CEMENT

High Grade Refractories
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PIPE

Montague-Wade Safety Water-Tube Boiler

Guaranteed more pounds pressure, horse-power for horse-power. Gets up full head of staem quicker—won't blow up—can be cleaned quickly—easily.
1 to 20 h. p. and larger.
Full details and prices upon application.

Montague pipe and other steel products have stood the test of time. You'll find it a good investment to use them.

Riveted Steel Pipe — **Well Casing** — **Concrete Forms** — **Stacks**

Welded Steel Pipe — **Oil & Water Tanks** — **Siphons** — **Flumes**

MONTAGUE PIPE & STEEL CO
San Francisco California

thus increasing labor turnover—than can ever be estimated.

A foreman who plays favorites forces discouragement and lack of interest on his workers. He produces loafing, and excessive labor turnover. He kills cooperation and teamwork.

Above all, a foreman should be cheerful. This is not merely a sentimental thing; it is good business. It stimulates ambition and makes friends—contented friends who will stick.

A man in charge of men cannot succeed unless his men succeed and to do this there must be the spirit of cooperation ever prevalent. A good foreman will see that every new employee is taught the value of cooperation and set the example himself. Everyone does not take kindly to cooperation, but it can be injected into almost everyone. There are, of course, some who won't stand honest upbuilding criticism. They are weak links and it will strengthen the organization and decrease turnover to get rid of them.

As a means of decreasing labor turnover keep men interested in doing bigger and better things. Don't try to do it all yourself. Give some understudy some responsibility; keep men interested in the other fellow's job; have more than one man who can do some certain piece of work, then when the regular worker leaves or becomes incapacitated the work will not stop while a man is being trained for the job. The writer personally believes in the strict enforcement of seniority, provided, of course, other things are equal. It is a wonderful stimulant to promote good work, and produce a contented and efficient worker when the employee feels that he is next in line for a bigger, better job if he does the right thing. On the other hand, his ambition is destroyed, his work lags, or perhaps he quits, and a good man is lost to the organization if someone steps ahead of him and no reason is given him for such a move. In cases of the kind, I believe the man who held the seniority should be told why he did not get the job. He would undoubtedly work much harder to merit the next advancement.

The best way to decrease labor turnover is to be natural. Throw away all unnecessary dignity; don't heitate to give credit where credit is due. Be open minded; welcome suggestions. Shoulder the blame if you are to blame. Be able to criticise both work and suggestions in a way that will not offend and tactfully lead erring workers to bigger, greater efforts.

To close, if you want satisfied employees, friendly employees and efficient employees, be one yourself!

PACIFIC SERVICE EMPLOYEES PRESENT "THE MIKADO"

Two performances of "The Mikado" are being given by members of the San Francisco division of the Pacific Service Employees Association, the Pacific Gas & Electric Company employee organization, on the evenings of December 14 and 15.

DEPARTMENT OF SAFETY NOW ESTABLISHED BY L. A. G. & E.

Marking the establishment of a new Department of Safety, which will undertake accident prevention, safety first and first aid work among the company's employees, the Los Angeles Gas & Electric Corporation has secured the services of J. R. Rowe as Safety Engineer. Vernon Taylor of the Corporation's electric shop will assist Mr. Row, and will serve as an instructor in first aid practices. Mr. Rowe was formerly with the United States Bureau of Mines, with headquarters in Berkeley.

Problems *of* Gas Service

(Continued from Page 44)

surance, damages, relief work, maintenance of general structures.

TAXES

Federal income tax.
Federal capital stock tax.
State tax.
Local taxes.
Franchise taxes.

DEPRECIATION

Allowances for writing off investment physical properties.

In addition there must be considered the items of miscellaneous expenses, uncollectible bills, and return upon investment.

SERVICE COST ANALYZED

An analysis of the cost of service for the Los Angeles Gas and Electric Corporation indicates about 22 per cent of the cost of gas to the consumer is to cover the cost of gas and oil required for manufacturing purposes. The operation of the production plant comprises about 6.7 per cent of the total charges; transmission and distribution, 5.1 per cent; commercial, 6.7 per cent; general, 4.4 per cent; depreciation, 8 per cent; taxes, 10.4 per cent; uncollectible bills, .7 per cent; return on investment, 35.2 per cent.

It is interesting to note the large amount paid for taxes. Out of the bill of the average customer, which amounts to $42.00 per year, nearly $4.50 is paid to the Federal and State government for tax purposes. In reality, the utility acts as an agent for the Government in the collection of taxes, these taxes being charged against gas service in substantially the same manner as gasoline and property taxes are charged in other cases.

Charges for depreciation are based upon the estimated lives of the various elements of equipment comprising the plant. For example, it is estimated that gas mains have an average operative life of 25 years. The total investment in mains is then depreciated at a rate which will return the total original cost at the end of the 25-year period, the annuity being figured upon a sinking fund basis, wherein the annual charge is less than one-twenty-fifth of the total amount to be accrued. This computation assumes the accumulation of interest at 6 per cent upon the money paid into the reserve fund.

From the foregoing statements, it is apparent that all of the financial transactions of public utilities in this state are very carefully carried out in accordance with requirements prescribed by the State Railroad Commission, which are designed to protect the public interest at all times. Under such methods of operation, gas rates are maintained at very low levels.

Figure No. 4 presents a comparison of the cost of gas in 12 large cities in this country. These costs are upon the basis of the charge per million available heat units, which in reality is the true measure of the cost of any fuel. The irregular line across the chart shows the average rate per thousand cubic feet. From this chart, it is at once apparent that Los Angeles enjoys an extremely low gas rate, both on the basis of a thousand cubic feet and per million B.t.u's. The outstanding reason for this is the natural gas resources of this locality. While it is to be noted that the other cities shown in this comparison do not enjoy the benefits of natural gas service, yet if we analyze the total cost of gas in these same cities and deduct from that the cost of the gas itself, the remaining portion which represents the true service part, we find that the charges

Every dollar's worth of pipeline gives more than a dollar's worth of service when it is Properly Protected with

Pioneer PIPE COVERING

Oil Companies and Public Utilities find the savings, due to increased service, far greater than the cost of this proven protection!

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Established 1888

LOS ANGELES SAN FRANCISCO
PORTLAND SEATTLE
DENVER

A Portable Gasoline Plant

That weighs 6,000 pounds, can be hauled complete on a standard truck, that will operate without attention for 23 hours a day, and that has been proven over a period of more than two years and seventeen installations.

Designed and Built by

RYAN and HACKETT COMPANY
1224 Pacific Mutual Bldg., Los Angeles Calif.

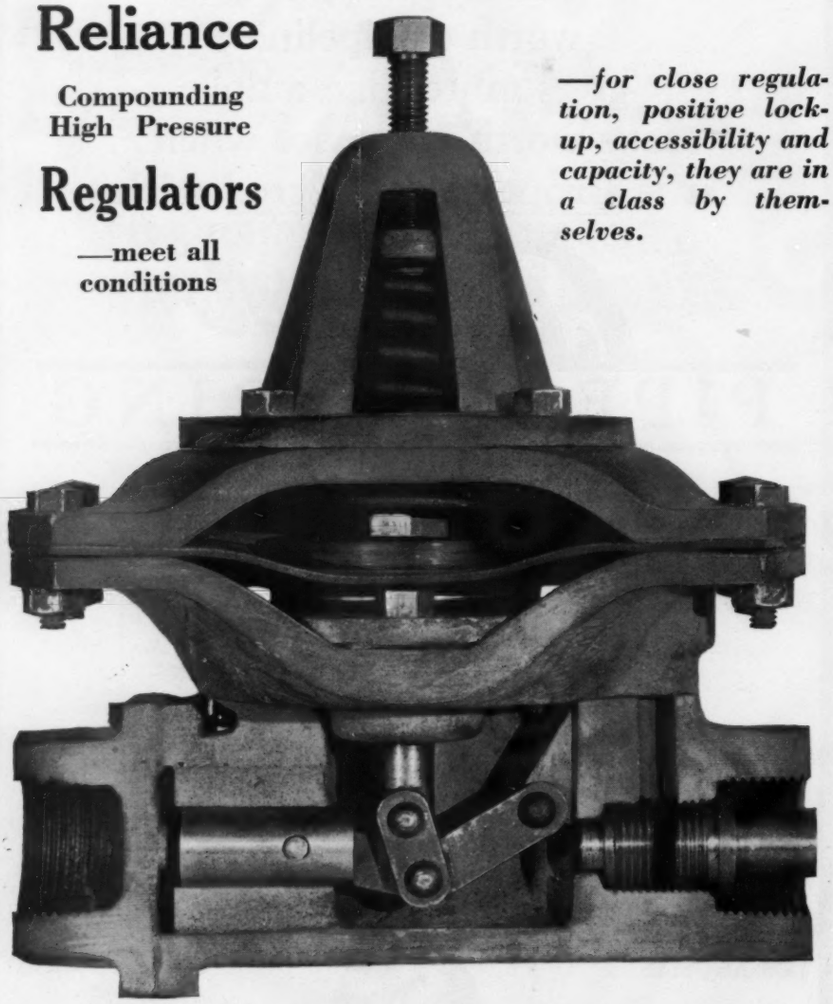
YOU CAN RELY ON RELIANCE

Reliance

Compounding High Pressure

Regulators

—meet all conditions



—for close regulation, positive lock-up, accessibility and capacity, they are in a class by themselves.

Reliance Manufacturing Co.

Pasadena, California

THERE IS A

PABCO PRODUCT

TO PROTECT

EVERY SURFACE

The Paraffine Companies, Inc.

San Francisco Oakland Los Angeles Seattle Portland

for service are less in Los Angeles than in even the largest cities in the East.

The supplying of gas is an undertaking in which the service part of the business is nearly as important as the actual supplying of the commodity itself. This fact is not appreciated by consumers generally, but if they would stop to analyze the situation, they all use gas because of the convenience of it. Other fuels might provide heat with a slightly lesser expenditure, but because of the inconvenience of their use, the customer has chosen gas as the almost universal fuel in this locality. If the gas company fails to give service along with its commodity, the consumer is immediately dissatisfied. The quality of this service is judged by the public from their contact with employees of the corporation, and also by the convenience and attention they receive in regard to the operation of their appliances.

NEW RECONNECTING PRACTICE ADOPTED BY P. G. & C. CO.

As a step in the direction of eliminating all possible sources of leakage the Portland Gas & Coke Company has discontinued the use of long screws or patent couplings when reconnecting services and small lateral mains after a new main has been laid to replace an old line. The connection is now made by using a screw coupling and bronze welding both sides of the coupling. Some leakage exists during the welding but it does not interfere with the operation after the welders get accustomed to it. This method has been used successfully on both high pressure and low pressure lines.

P. G. & E. TO EXTEND SERVICE TO ROSEVILLE AND VICINITY

Trustees of the city of Roseville, Calif., have granted the petition of the Pacific Gas & Electric Company to lay mains and distribute gas in the community. A 50-year franchise has been given the company, and a high pressure line from the Sacramento plant will serve Roseville and towns en route.

OIL BURNER MANUFACTURERS LOOK FOR BIG MARKET

Competitors of gas are still on the job. According to an article by H. J. Struth in the November issue of Fuel Oil, calculations, and a chart, which show potential domestic oil burner markets, lead to the conclusion that there is a market for oil burners to the value of $1,500,000,000.

Gas Revives Tile-Making

(Continued from Page 21)

place openings, doorways or wall fountains; for panels set in building or patio walls, or for entire floors, wainscots or ceilings. Only when it is used to the latter extent are its possibilities fully realized, although it is quite effective when applied simply as a decorative band or pane.

For such exacting work as the manufacture of pattern tile, gas is by far the most satisfactory fuel. Its use eliminates the disadvantages inherent in oil burning systems, such as clogged burners, with the resultant chilling of sections of the kiln when the defective burners are removed for cleaning or replacement; air compressor breakdowns, and the continual adjustment of burners in order to maintain a desired temperature. Gas may be regulated to a degree of precision impossible with other fuels; it is absolutely clean and free from smoke or soot; and, most important of all, it gives a perfectly even distribution of heat throughout the kiln, thus insuring a uniformly high quality in the finished product.

Classified Advertising

Classified advertising five cents per word; minimum $2.00 per insertion. Situation Wanted advertisements up to 50 words will be published three consecutive issues without charge.

Help Wanted

Wanted—Experienced crew foreman for street department of Gas Company in northwestern city. Answer in own handwriting giving age, experience, reference and salary expected. Box A-4 *Western Gas.*

Situations Wanted

Note: Western Gas will publish free of charge, under this heading, advertisements of situations wanted. Maximum length, 50 words; additional space at classified rates five cents per word per insertion. Copy should be neatly typewritten on one side of paper only, and should be mailed to reach *Western Gas* not later than the 20th day of the month prior to publication date.

Wanted—Employment on the Pacific Coast by man from Mid-Continent Field. Experience installing and managing city distribution plants, and general line work. Last position paid $200.00 and expenses which I resigned due to family sickness. Box A-2 *Western Gas.*

Heating Engineer—39 with 25 years experience in warm air heating in all its branches, mfg. heaters, lay out work, figure jobs, handle men and shop, install work and sell to the public. At present employed but want better and permanent opening with chances for advancement. Will start at $250.00. Have several good gas heater patents. Box A-1 *Western Gas.*.

Chemical Engineering Graduate—28, with five year's experience, covering all branches of distribution work, wishes to change to a position offering greater opportunity for advancement. Now employed as estimator on main line construction work. Best of references. Box A-3, *Western Gas.*

Position as assistant superintendent of oil or gas pipe line wanted by young married man with eight years of varied experience and sterling references. At present employed but advancement and more lucrative salary desired. Thorough knowledge of construction and installation. Box A-5 *Western Gas.*

Sell your second hand machinery and equipment through a small classified advertisement in *Western Gas.* It costs but five cents per word or $2.00 per issue.

INDEPENDENT PET. MARKETERS ASSN. OFFICES MOVE

Offices of the Independent Petroleum Marketers Association of California have been moved from the Rives-Strong Building, to 1006 California Building, Los Angeles. H. H. Maxson is secretary of the organization.

Corrosion, the destructive and costly enemy of your pipe lines, is effectively balked by the thick protective coating made by one application of Eclipse Save-A-Line to the pipe surface.

This extra thick film ,reinforced with asbestos fibre, elastic and enduring, protects for many years against the corrosive action of soils caused by moisture, lime, alkali or electrolysis. The life of thousands of miles of pipe line has been extended by the protecting film of Save-A-Line.

It can be applied without heating and by inexperienced labor. Only one application necessary.

Let us know your requirements. We will be glad to send you sample and quote you prices. If you have any particular difficulties peculiar to your soil or climate, our Service Department is at your disposal.

A Few of the Larger Users of Save-A-Line

The Shell Company
Lone Star Gas Company
Humble Pipe Line Company
The Gulf Pipe Line Company
Associated Pipe Line Company
California Petroleum Co.

The Eclipse Paint & Mfg. Co.

Cleveland, Ohio, U. S. A.

Dallas **Detroit** **Philadelphia** **San Francisco**
Denver **Newark** **Pittsburgh** **Charlotte, N. C.**

WESTERN GAS
626 South Spring Street,
Los Angeles, California

Starting with the next monthly issue, you may send WESTERN GAS to the undersigned. Upon receipt of invoice, remittance will be sent to cover (1 year $2.00) or (3 years $5.00).

Name ..... *Title* .....

Company .....

Address .....

City and State .....

Please Check

[ ] GAS COMPANY [ ] GAS APPLIANCES
[ ] NATURAL GASOLINE CO. [ ] MISCELLANEOUS

Subscription: 1 Year, $2.00; 3 Years, $5.00, in Advance

A WESTERN GUIDE to INDUSTRIAL PURCHASING

Readers interested in any articles not listed in these pages are cordially invited to advise *Western Gas* of their wants and every effort will be made to furnish a list of the proper manufacturers. Addresses of companies listed on these pages may be found by consulting their advertisements in this issue.

Absorption and Compression Plant Equipment
Baker Iron Works.
C. F. Braun & Co.
Chaplin-Fulton Mfg. Co.
J. A. Campbell.
Jensen Instrument Co.
The E. A. Key Company
Western Pipe & Steel Co.

Absorption Towers
Baker Iron Works.
C. F. Braun & Co.
J. A. Campbell.
S. Herbert Lanyon
Steere Engineering Co.
Western Pipe & Steel Co.

Abrasives
Abrasive Engineering Corp'n.

Acetylene, Dissolved
Commercial Acetylene Co.

Acid Resisting Iron
Pacific Foundry Company.

Adjustable Plugs
Lattimer-Stevens Co.
Western Pipe & Steel Co.

Agitators
Baker Iron Works.
Western Pipe & Steel Co.

Aluminum Bronze Powder for Paint
The Paraffine Co.s, Inc.

Analyzers
C. F. Braun & Co.
Smith-Emery Co.

Annealers (Bar, Blank, Strip)
Pacific Meter Works.

Anti-Fluctuators
Pacific Meter Works.

Apparatus, Experimental Gas
The Alpha-Lux Co., Inc.
Metric Metal Works.
Pacific Meter Works.

Appraisals and Valuations
Smith-Emery Co.

Aqua Ammonia Apparatus
Steere Engineering Co.

Asphalt Compounds
Pioneer Paper Company.

Bags, Gas Main
Connelly Iron Sponge & Governor Co.
Mueller Co.
Safety Gas Main Stopper Co.

Barometers
Jensen Instrument Co.
Westcott & Greis, Inc.

Belting
Smith, Booth, Usher Co.

Bench Iron Work
General Gas Light Co.

Benzol, Recovery Apparatus
Steere Engineering Co.

Bins, Storage (ash, coal, coke)
Steere Engineering Co.

Blast Gates
Montague Pipe & Steel Co.
Steere Engineering Co.

Blocks and Tiles, Fire Clay
The Alpha-Lux Co., Inc.
American Refractories Co.
Los Angeles Pressed Brick Co.
Steere Engineering Co.
Stockton Fire Brick Co.
S. Herbert Lanyon.

Blowers and Boosters
General Gas Light Co.
Ingersoll-Rand Co.

Blowpipes
Montague Pipe & Steel Co.

Boiler—Brickwork
J. N. J. Firebrick Co.

Boiler Settings, Pipe and Boiler Insulation

Boilers
Baker Iron Works.
The E. A. Key Company
Montague Pipe & Steel Co.
Smith, Booth, Usher Co.
Western Pipe & Steel Co.

Boilers, Gas-Fired
Baker Iron Works.
General Gas Light Co.
Montague Pipe & Steel Co.
Smith, Booth, Usher Co.

Boiler Settings, Pipe and Boiler Insulation
S. Herbert Lanyon.
Pioneer Paper Company.
J. J. Thorpe & Son, Inc.

Boilers, Waste Heat
Baker Iron Works.

Boilers, Water Tube
Baker Iron Works.
The E. A. Key Company
Montague Pipe & Steel Co.
Smith, Booth, Usher Co.
Western Pipe & Steel Co.

Boxes
Baker Iron Works.
Gas Furnace Association.
Steere Engineering Co.

Brass (rods, sheets, tubes, wire)
Mueller Co.

Breakers
Ingersoll-Rand Co.

Breeching (Boiler and Stack)
Western Pipe & Steel Co.

Brick, Firebrick
Abrasive Engineering Corp'n.
The Alpha-Lux Co., Inc.
American Refractories Co.
Los Angeles Pressed Brick Co.
S. Herbert Lanyon.
J. J. Thorpe & Son, Inc.
Steere Engineering Co.
Stockton Fire Brick Co.

Brick, Firebrick—Installation
J. N. J. Firebrick Co.

Broilers, Hotel
General Gas Light Co.

Brushes, Wire Pneumatic
Abrasive Engineering Corp'n.
Ingersoll-Rand Co.

Buildings, Steel
Baker Iron Works.
Western Pipe & Steel Co.

Bunkers, Steel and Concrete
Western Pipe & Steel Co.

Burners
Gas Furnace Association.
General Gas Light Co.
S. Herbert Lanyon.
Lee B. Mettler.
Montague Pipe & Steel Co.
Payne Furnace & Supply Co.
Rotary Manufacturing Co.
J. J. Thorpe & Son, Inc.
Western Pipe & Steel Co.

Burners—Gas
Lee B. Mettler

Burners, High Pressure
General Gas Light Co.
S. Herbert Lanyon.
Lee B. Mettler.
Rotary Manufacturing Co.

Burners, Low Pressure
Gas Furnace Association.
General Gas Light Co.
S. Herbert Lanyon.
Lee B. Mettler.
Payne Furnace & Supply Co.
Rotary Manufacturing Co.

Burners—Oil
Rotary Manufacturing Co.

By-product Recovery Apparatus
Oliver Continuous Filter Co.
Steere Engineering Co.

Calorimeter Accessories
Metric Metal Works.
Pacific Meter Works.

Calorimeters
The Alpha-Lux Co., Inc.
Metric Metal Works.
Pacific Meter Works.

Cases, Meter
Metric Metal Works.
Pacific Meter Works.
Pittsburgh Meter Co.

Casinghead, Gas Meters
Jensen Instrument Co.
Metric Metal Works.
Pacific Meter Works.
Pittsburgh Meter Co.

Casing and Tubing (steel)
Montague Pipe & Steel Co.
Smith, Booth, Usher Co.
Steere Engineering Co.

Casing, Wrought Iron
Smith, Booth, Usher Co.

Casing—Iron
South Chester Tube Company

Casing—Steel
South Chester Tube Company

Cast Iron Pipe
Smith, Booth, Usher Co.
Steere Engineering Co.
United States Cast Iron Pipe and Foundry Co.

Castings
Pacific Foundry Company.
Philadelphia Steel & Iron Co.
Steere Engineering Co.
United States Cast Iron Pipe and Foundry Co.

Cement
Abrasive Engineering Corp'n.
Stockton Fire Brick Co.

Cement, High Temperature
Stockton Fire Brick Co.

Cement—Plastic
Pioneer Paper Company.

Centrifugal Pipe
United States Cast Iron Pipe and Foundry Co.

Charging Machines (retort, etc.)
Steere Engineering Co.

Checker Brick
Abrasive Engineering Corp'n.
American Refractories Co.
Los Angeles Pressed Brick Co.
Steere Engineering Co.
Stockton Fire Brick Co.

Chemical and Gas Testing Apparatus
The Alpha-Lux Co., Inc.
Pacific Meter Works.
Westcott & Greis, Inc.

Chemists, Analytical
Smith-Emery Co.

Chimneys, Radial Brick
American Refractories Co.
Los Angeles Pressed Brick Co.
Stockton Fire Brick Co.
J. J. Thorpe & Son, Inc.

Chimneys, Radial Brick Installation
J. N. J. Firebrick Co.

Chutes (coal, coke, ash)
Steere Engineering Co.
United States Cast Iron Pipe and Foundry Co.

Clamps and Sleeves, Pipe
Mueller Co.

Clamps, Service
Mueller Co.

Cleaners, Service
General Gas Light Co.
Pacific Meter Works.

Coal Gas Plants
Steere Engineering Co.

Coal Tar Products and Chemicals
The Paraffine Co.s, Inc.

Cocks
General Gas Light Co.
Lattimer-Stevens Co.
Merco Nordstrom Valve Co.
Mueller Co.
Geo. D. Roper Corporation.

Coils and Bends
Philadelphia Steel & Iron Co.

Collectors, Dust
Western Pipe & Steel Co.
Steere Engineering Co.

Compressors
The C. & G. Cooper Co.
Ingersoll-Rand Co.
Smith, Booth, Usher Co.

Compressors, Air
The C. & G. Cooper Co.
Ingersoll-Rand Co.
Oliver Continuous Filter Co.
Robertson & Company.
Smith, Booth, Usher Co.

Compressors, Gas
The C. & G. Cooper Co.
Ingersoll-Rand Co.
Smith, Booth, Usher Co.

Compressors, High Pressure
The C. & G. Cooper Co.
Ingersoll-Rand Co.

Compressors, Portable
Ingersoll-Rand Co.
Robertson & Company.
Smith, Booth, Usher Co.

Condensers
Baker Iron Works.
C. F. Braun & Co.
Ingersoll-Rand Co.
S. Herbert Lanyon.
Steere Engineering Co.

Condenser Boxes
Baker Iron Works.

Condenser Tubes
Steere Engineering Co.

Cooling Systems, Towers
C. F. Braun & Co.
Steere Engineering Co.

Connections and Seals, Meter
Pacific Meter Works.

Controllers
Jensen Instrument Co.

Controlling Devices, Electric
Gas Furnace Association.
L. R. Teeple Co.

Controls, Air and Steam
Jensen Instrument Co.
S. Herbert Lanyon.
C. F. Braun & Co.
S. Herbert Lanyon.
Steere Engineering Co.
L. R. Teeple Co.

Cooling Systems
S. Herbert Lanyon.
Steere Engineering Co.

Cooling Towers
C. F. Braun & Co.
Steere Engineering Co.

Counters, Revolution
Jensen Instrument Co.

Couplings
Pittsburgh Meter Co.

Coverings (Tank, Boiler, Cold and Steam Pipe)
The Paraffine Co.s, Inc.
Pioneer Paper Company.

Cubic Foot Bottle
Metric Metal Works.
Pacific Meter Works.

Cutters, Pavement
Ingersoll-Rand Co.
Robertson & Company.

Cutters, Pavement
Ingersoll-Rand Co.

Cylinders, Compressor
The C. & G. Cooper Co.
Steere Engineering Co.

Dephlegmaters
C. F. Braun & Co.
Steere Engineering Co.
Western Pipe & Steel Co.

Diaphragms, Meter
Chaplin-Fulton Mfg. Co.
General Gas Light Co.
Metric Metal Works.
Pacific Meter Works.
Pittsburgh Meter Co.

Diggers, Clay
Ingersoll-Rand Co.
Robertson & Company.

Discharging Machines (retort, etc.)
Steere Engineering Co.

Displacement System, Tar
Steere Engineering Co.

Ditcher
Robertson & Company.
Smith, Booth, Usher Co.

Door, Clean-out
Baker Iron Works.
Steere Engineering Co.

Drills
Ingersoll-Rand Co.
Mueller Co.

Drill Pipe—Iron
South Chester Tube Company

Drill Pipe—Steel
South Chester Tube Company

Dryers
Payne Furnace & Supply Co.

Elevators
Baker Iron Works.

Engineers and Engineering Service
Smith-Emery Co.
Steere Engineering Co.
Western Pipe & Steel Co.

Engines
The C. & G. Cooper Co.
Ingersoll-Rand Co.
Western Machinery Co.

Engines, Diesel
The C. & G. Cooper Co.
Smith, Booth, Usher Co.
Western Machinery Co.

Engines, Gas
The C. & G. Cooper Co.
Ingersoll-Rand Co.
Smith, Booth, Usher Co.
Western Machinery Co.

Engines, Oil
The C. & G. Cooper Co.
Ingersoll-Rand Co.
Western Machinery Co.

Engines, Steam
Ingersoll-Rand Co.

Evaporating Apparatus
C. F. Braun & Co.
United States Cast Iron Pipe and Foundry Co.
S. Herbert Lanyon.

The *Inside* of Good Hot Water Service

Rust attacks the inside of water heaters built of corrodible metal. When vital parts rust the service is impaired.

Use of COPPER and BRASS in water heating installations insures against rust and guarantees permanent satisfactory service.

COPPER & BRASS
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Excavators, Ditch and Trench
Robertson & Company.
Smith, Booth, Usher Co.

Exchangers, Heat
Baker Iron Works.
C. F. Braun & Co.
S. Herbert Lanyon.
Steere Engineering Co.
Western Pipe & Steel Co.

Exhausters
Ingersoll-Rand Co.
S. Herbert Lanyon.
United States Cast Iron Pipe and Foundry Co.

Experimental Apparatus
S. Herbert Lanyon.
Metric Metal Works.
Pacific Meter Works.

Extractors
Steere Engineering Co.

Extinguishers, Fire
American La France Fire Engine Co.

Fans
Gas Furnace Association.
General Gas Light Co.
Smith, Booth, Usher Co.

Faucets, Drain
Mueller Co.

Felt—Deadening
Pioneer Paper Company.

Filters
S. Herbert Lanyon.
Oliver Continuous Filter Co.
Smith, Booth, Usher Co.
United States Cast Iron Pipe and Foundry Co.

Fire Clay and Products
The Alpha-Lux Co., Inc.
American Refractories Co.
S. Herbert Lanyon.
Los Angeles Pressed Brick Co.
Stockton Fire Brick Co.

Fire Brick Contractors
J. J. Thorpe & Son, Inc.
Stockton Fire Brick Co.

First Aid Equipment
American La France Fire Engine Co.

Fittings
Pacific Foundry Company.
Philadelphia Steel & Iron Co.
Smith, Booth, Usher Co.
Steere Engineering Co.
United States Cast Iron Pipe and Foundry Co.

Fixtures, Lighting (Domes, Portables, etc.)
Welsbach Company.

Flashlights and Batteries
The Paraffine Co.s, Inc.

Feed Water Heaters
C. F. Braun & Co.
S. Herbert Lanyon.

Fire Brick
Abrasive Engineering Corp'n.
The Alpha-Lux Co., Inc.
American Refractories Co.
S. Herbert Lanyon.
Los Angeles Pressed Brick Co.
Stockton Fire Brick Co.
Steere Engineering Co.

Flanges
Montague Pipe & Steel Co.
Pacific Foundry Company.
Pittsburgh Meter Co.
Smith, Booth, Usher Co.
Steere Engineering Co.
Westcott & Greis, Inc.

Floodlights
S. Herbert Lanyon.

Flooring—Industrial
Pioneer Paper Company.

Floors
Steere Engineering Co.

Forges, Gas-Fired
General Gas Light Co.

Forged Steel Pipe Flanges
Philadelphia Steel & Iron Co.

Forgings
Baker Iron Works.
Philadelphia Steel & Iron Co.

Gas Furnace Association.
General Gas Light Co.
S. Herbert Lanyon.
Payne Furnace & Supply Co.
Potter Radiator Corporation.
Pacific Gas Heating Co.
Geo. D. Roper Corporation.
J. J. Thorpe & Son, Inc.

Furnaces, Floor
Electrogas Furnace Co.
Gas Furnace Association.
Payne Furnace & Supply Co.
Pacific Gas Heating Co.
Potter Radiator Corporation.

Furnaces, Lead Melting
Gas Furnace Association.
Mueller Co.
Payne Furnace & Supply Co.
Potter Radiator Corporation.

Gas Analysis Apparatus
Jensen Instrument Co.
Metric Metal Works.
Pacific Meter Works.

Gas Meter Stop Cocks and Valves
Lattimer-Stevens Co.

Gas Main Tapping & Drilling Machines
Mueller Co.

Gaskets
Pittsburgh Meter Co.
Safety Gas Main Stopper Co.
Smith, Booth, Usher Co.
Steere Engineering Co.
The E. A. Key Company

Gasometer
Pacific Meter Works.
Steere Engineering Co.

Gas Pipe Line Construction
The E. A. Key Company
Robertson & Company.
Steere Engineering Co.
Western Pipe & Steel Co.

Gauges
The Alpha-Lux Co., Inc.
General Gas Light Co.
Jensen Instrument Co.
Metric Metal Works.
Pacific Meter Works.
Pittsburgh Meter Co.
Steere Engineering Co.
Westcott & Greis, Inc.

Gauges, Steam
Jensen Instrument Co.
Smith, Booth, Usher Co.
Steere Engineering Co.
Westcott & Greis, Inc.

Gauges, U Type
General Gas Light Co.
Jensen Instrument Co.
Metric Metal Works.
Lee B. Mettler.
Pacific Meter Works.
Safety Gas Main Stopper Co.
Steere Engineering Co.
Westcott & Greis, Inc.

Generators, Acetylene
Commercial Acetylene Co.

Generators, Water Gas
Baker Iron Works.
Steere Engineering Co.

Glassware
Westcott & Gries, Inc.

Governors
Chaplin-Fulton Mfg. Co.
Connelly Iron Sponge & Governor Co.
Pacific Meter Works.
Reynolds Gas Regulator Co.
Sprague Meter Co.
Steere Engineering Co.
Westcott & Greis, Inc.

Hammers
Ingersoll-Rand Co.

Hanger, Meter
Mueller Co.

Hangers, Iron and Steel
Baker Iron Works.
Philadelphia Steel & Iron Co.

Heaters
Baker Iron Works.
C. F. Braun & Co.
Gas Furnace Association.
General Gas Light Co.
S. Herbert Lanyon.
Pacific Gas Heating Co.
Payne Furnace & Supply Co.
Potter Radiator Corporation.
Welsbach Company.
John Wood Mfg. Co.

Heaters, Floor
Electrogas Furnace Co.
Gas Furnace Association.
General Gas Light Co.
Pacific Gas Heating Co.
Payne Furnace & Supply Co.
Potter Radiator Corporation.

Heaters, Wall
Gas Furnace Association.
General Gas Light Co.
Pacific Gas Heating Co.
Payne Furnace & Supply Co.
Potter Radiator Corporation.

Heat Exchangers
Baker Iron Works.
C. F. Braun & Co.
S. Herbert Lanyon.
Steere Engineering Co.
Western Pipe & Steel Co.

Heat Interchangers
C. F. Braun & Co.
S. Herbert Lanyon.
Steere Engineering Co.
Western Pipe & Steel Co.

Hoists
Ingersoll-Rand Co.
Pacific Foundry Company.
Smith, Booth, Usher Co.
Western Machinery Co.

Holders
Baker Iron Works.

Holders, High Pressure
Baker Iron Works.

Hoppers
Montague Pipe & Steel Co.

Hose, Air
Ingersoll-Rand Co.

Hot Plates
General Gas Light Co.
Geo. D. Roper Corporation.

Hygrometers
Jensen Instrument Co.
Westcott & Greis, Inc.

Incinerators
Baker Iron Works.
General Gas Light Co.
S. Herbert Lanyon.
J. J. Thorpe & Son, Inc.
Western Pipe & Steel Co.

Incinerator Brickwork
J. N. J. Firebrick Co.

Indicators
S. Herbert Lanyon.
Westcott & Greis, Inc.

Instruments (Measuring, Testing and Recording)
The Alpha-Lux Co., Inc.
Jensen Instrument Co.
Metric Metal Works.
Pacific Meter Works.
Steere Engineering Co.
Westcott & Greis, Inc.

Insulating Materials
Beacon Water Heater Co.
The Paraffine Co.s, Inc.
Pioneer Paper Company.
Stockton Fire Brick Co.

Irons, Gas
General Gas Light Co.

Kilns
J. J. Thorpe & Son, Inc.
Western Pipe & Steel Co.

Kilns—Brickwork
J. N. J. Firebrick Co.

Laboratory (for testing fire brick, refractories, etc.)

Laboratory Supplies
Mueller Co.
S. Herbert Lanyon.
Westcott & Greis, Inc.

Ladles, Hot Metal
Mueller Co.
Philadelphia Steel & Iron Co.

Lamps
General Gas Light Co.
Welsbach Company.

Lighters
Tappan Stove Co.

Lighting Incidentals
Welsbach Company.

Line Pipe—Iron
South Chester Tube Company

Line Pipe—Steel
South Chester Tube Company

Linings—Brickwork
J. N. J. Firebrick Co.

Linings—Car
Pioneer Paper Company.

Lubricators
Smith, Booth, Usher Co.

Lux Material
The Alpha-Lux Co., Inc.

Machinery
Smith, Booth, Usher Co.
Steere Engineering Co.

Machines
Steere Engineering Co.

Main, Bags
Mueller Co.
Safety Gas Main Stopper Co.

Mains, Street
United States Cast Iron Pipe and Foundry Co.

Main, Stopper
Mueller Co.
Safety Gas Main Stopper Co.

Mantles, Gas Lighting
General Gas Light Co.
Welsbach Company.

Manometers
Jensen Instrument Co.
Lee B. Mettler.
Westcott & Greis, Inc.

Meter Seals
Lattimer-Stevens Co.

Meter Shelves
Lattimer-Stevens Co.

Meter Swivels and Caps
Lattimer-Stevens Co.

Meters
Jensen Instrument Co.
Metric Metal Works.
Pacific Meter Works.
Pittsburgh Meter Co.
Sprague Meter Co.
Westcott & Greis, Inc.

Meters, Air
Jensen Instrument Co.
Metric Metal Works.
National Meter Co.
Pacific Meter Works.
Pittsburgh Meter Co.
Westcott & Greis, Inc.

Meters, Boiler
Jensen Instrument Co.
Pittsburgh Meter Co.

Meters, Burner Test
Metric Metal Works.
National Meter Co.
Pacific Meter Works.
Pittsburgh Meter Co.
Sprague Meter Co.

Meters, Cast Iron Gas
Metric Metal Works.
National Meter Co.
Pacific Meter Works.
Pittsburgh Meter Co.
Sprague Meter Co.

Meter Connections
Lattimer-Stevens Co.
Metric Metal Works.
National Meter Co.
Pacific Meter Works.
Pittsburgh Meter Co.
Sprague Meter Co.

Meters, Complaint
Metric Metal Works.
Pacific Meter Works.
Pittsburgh Meter Co.

Meters, Consumers
Metric Metal Works.
Pacific Meter Works.
Pittsburgh Meter Co.
Sprague Meter Co.

Meters, Flow
Jensen Instrument Co.
Metric Metal Works.
Pittsburgh Meter Co.
Westcott & Greis, Inc.

Meters, Fluid
Jensen Instrument Co.
Metric Metal Works.
Pittsburgh Meter Co.
Westcott & Greis, Inc.

Meters, Gas
Jensen Instrument Co.
National Meter Co.
Metric Metal Works.
Pacific Meter Works.
Pittsburgh Meter Co.
Sprague Meter Co.
Westcott & Greis, Inc.

Meters, Gasoline and Oil
Jensen Instrument Co.
Metric Metal Works.
Pittsburgh Meter Co.
Westcott & Greis, Inc.

Meters, High Pressure Distribution
Jensen Instrument Co.
Metric Metal Works.
Pittsburgh Meter Co.
Pacific Meter Works.
Sprague Meter Co.

Meters, High Pressure Iron Case
The E. A. Key Company
Metric Metal Works.
Pacific Meter Works.
Pittsburgh Meter Co.
Sprague Meter Co.

Meters, Industrial Consumers
Jensen Instrument Co.
Metric Metal Works.
Pacific Meter Works.
Pittsburgh Meter Co.
Sprague Meter Co.

Meters, Iron Case
The E. A. Key Company
Metric Metal Works.
Pacific Meter Works.
Pittsburgh Meter Co.
Sprague Meter Co.

Meters, Laboratory
Metric Metal Works.
Pacific Meter Works.
Pittsburgh Meter Co.
Sprague Meter Co.
Westcott & Greis, Inc.

Meters, Large Capacity
Metric Metal Works.
Pacific Meter Works.
Pittsburgh Meter Co.
Sprague Meter Co.
Westcott & Greis, Inc.

Meters, Oil
Jensen Instrument Co.
Metric Metal Works.
Pittsburgh Meter Co.
Westcott & Greis, Inc.

Meters, Orifice
Jensen Instrument Co.
S. Herbert Lanyon.
Metric Metal Works.
National Meter Co.
Pacific Meter Works.
Pittsburgh Meter Co.
Westcott & Greis, Inc.

Meters, Oxygen
Metric Metal Works.
National Meter Co.
Pacific Meter Works.
Pittsburgh Meter Co.
Sprague Meter Co.

Meters, Oxygen and Hydrogen
Metric Metal Works.
National Meter Co.
Pacific Meter Works.
Pittsburgh Meter Co.
Sprague Meter Co.

Meters, Prepayment
Metric Metal Works.
National Meter Co.
Pacific Meter Works.
Pittsburgh Meter Co.
Sprague Meter Co.

Meters, Station
Metric Metal Works.
National Meter Co.
Pacific Meter Works.
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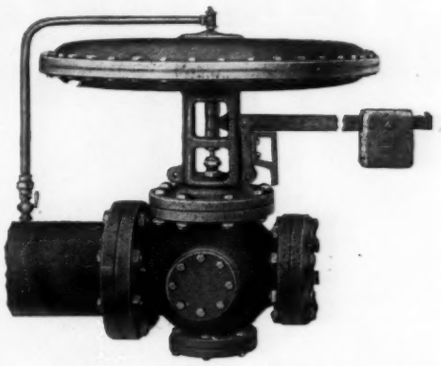

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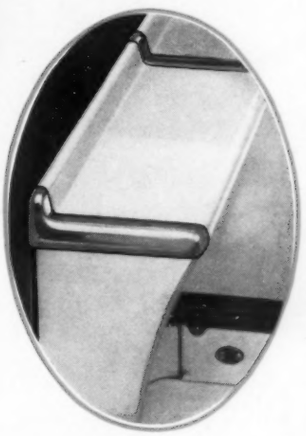

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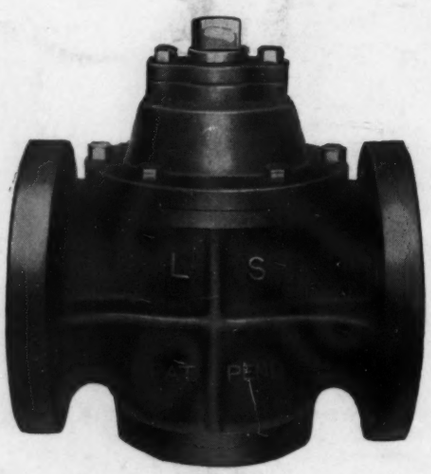

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